TWENTIETH CENTURY TEXT-BOOKS

AN ANALYTICAL KEY

TO SOME OF THE COMMON WILD AND CULTIVATED SPECIES OF FLOWERING PLANTS

BY

JOHN M. COULTER, A. M., PH. D.

HEAD OF DEPARTMENT OF BOTANY IN
THE UNIVERSITY OF CHICAGO

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1905

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PREFACE

One purpose of this little pamphlet is to enable the beginning student to discover the names of some of the most common seed-plants likely to occur wild in his vicinity or in common cultivation. Only those plants have been included which bloom in the spring or early summer, as such plants form the most usual and the easiest introduction to such work.

The region covered is that of the standard manuals for the Northern States—viz., the district north of the northern boundaries of North Carolina and Tennessee and west to the 100th meridian. This does not mean that many of the plants do not occur south and west of this area, so that contiguous States may use the Key to some extent.

To select a few hundred plants from so large an area is to run the risk of omitting some of the most common or most available plants of some regions. Teachers are urged, therefore, to send the names of additional plants which their experience may have found useful, that they may be included in subsequent editions. It is also strongly urged upon every teacher to obtain for reference one or both of the standard manuals for the region, in order that the Key may be supplemented and a greater range of plants examined.

As the Key contains only a small percentage of the plants of any region, it will be necessary for the teacher to select the forms, and not to attempt to name the plants indiscriminately. Unless this is done, the result will be confusion and disappoint-

ment. It should be clearly understood, also, that to obtain the names of plants is not the chief service to be rendered by the Key. It is intended to illustrate those structures of seed-plants which are used in their classification, and so lead to some conception of the principal groups. To learn to recognize a group of plants is far better than to remember the name of a species.

It is taken for granted that the teacher knows how to use a simple key, directions for which are far more effectively given with a plant in hand than by any amount of printed text. It must also be taken for granted that the teacher is familiar with the common terms used in descriptions. Some of these are defined in the Key, and others will be found in any good dictionary. Only such are used as seem absolutely necessary.

The two standard manuals for the region are Gray's *Manual* and Britton's *Manual*. In many cases these two manuals give different names to the same plant. As the Key is intended as an introduction to either of them, the names in both are given when they differ, the first being the name used in the older Gray's *Manual*, the second the name used in the more recent Britton's *Manual*. It will be noticed that sometimes the name of the genus differs, and sometimes only the name of the species.

The order in which the families are given is known as the order of Engler and Prantl, and differs from that found in Gray's *Manual*. It begins with what are regarded as plants of lower rank and advances to the highest, and is thought to express natural relationships better than any order yet proposed.

John M. Coulter.

The University of Chicago,
March, 1900.

KEY TO THE FAMILIES

I. MONOCOTYLEDONS

Parts of the flower usually in threes (never in fives); leaves mostly parallel-veined; ours all herbs except *Smilaceæ*.

1. *Flowers usually with neither calyx nor corolla and massed upon a more or less fleshy axis* (spadix)

Marsh or aquatic plants, with linear leaves.
Flowers in a dense cylindrical terminal spike . . . . **Typhaceæ** 5
Flowers in globular heads . . . . . **Sparganiaceæ** 6
Flowers in a cylindrical lateral spadix . . . . . **Araceæ** 7
Terrestrial plants, with broad or compound leaves . . . **Araceæ** 7

2. *Flowers with calyx and corolla alike* (perianth) *or different, not collected upon a spadix*

a. *Ovary superior* (appearing within the flower)

Pistils numerous . . . . . **Alismaceæ** 6
Pistil one.
Perianth of similar divisions or lobes.
Fruit a pod.
Styles separate or only partly united . . . **Melanthaceæ** 8
Styles solitary . . . . . **Liliaceæ** 9
Fruit a berry.
Stems not climbing . . . . . **Convallariaceæ** 12
Stems climbing by tendrils . . . . . **Smilaceæ** 14
Perianth of 3 green sepals and 3 colored petals.
Leaves broad, net-veined, whorled . . . **Convallariaceæ** 12
Leaves narrow, parallel-veined, alternate . . **Commelinaceæ** 8

b. *Ovary inferior* (appearing below the flower)

Stamens 3 . . . . . **Iridaceæ** 16
Stamens 6 . . . . . **Amaryllidaceæ** 15
Stamens 1 or 2 and massed with the style; flowers very irregular **Orchidaceæ** 17

II. DICOTYLEDONS

Parts of the flower usually in fives or fours; leaves mostly net-veined.

A. ARCHICHLAMYDEÆ

Corolla either wanting (*apetalous*) or of separate petals (*polypetalous*).

1. *Corolla wanting, and sometimes the calyx also* (naked)

a. *Flowers in aments* (dense scaly spikes); *trees or shrubs*

Leaves pinnately compound . . . . . **Juglandaceæ** 19
Leaves simple.
  Calyx wanting.
    A single flower in the axil of each bract; fruit a pod with numerous downy-tufted seeds . . . . . **Salicaceæ** 20
    Pistillate flowers 2 or 3 in the axil of each bract; fruit a winged or wingless nut . . . . . **Betulaceæ** 21
  Calyx present.
    Fruit a nut inclosed by a cup or involucre . . . . **Fagaceæ** 22
    Spike of flowers becoming a pulpy aggregate fruit . . **Moraceæ** 23

b. *Flowers not in aments*

* *Shrubs or trees*

Leaves opposite.
  Leaves palmately lobed; fruit in pairs and winged . . . **Aceraceæ** 49
  Leaves pinnately compound; fruit winged at apex . . . **Oleaceæ** 63
Leaves alternate, simple.
  Fruit winged all around . . . . . **Ulmaceæ** 23
  Fruit berry-like.
    Anthers opening longitudinally . . . . . **Thymelæaceæ** 54
    Anthers opening by uplifted valves . . . . . **Lauraceæ** 32

** *Herbs; sepals sometimes petal-like*

Pistils more than one, separate or nearly so.
  Flowers naked and in spikes . . . . . **Saururaceæ** 19
  Calyx present, and usually colored or petal-like . **Ranunculaceæ** 28
Pistil one.
  Ovary superior.
    Pod 5-celled and 5-beaked . . . . . **Crassulaceæ** 38
    Ovary 1-celled, becoming an akene . . . . **Polygonaceæ** 24
  Ovary inferior, 6-celled . . . . . **Aristolochiaceæ** 24

2. *Calyx and corolla both present, the latter of separate petals* (polypetalous)

a. *Stamens more than 10*

Trees, shrubs, or woody vines.
  Leaves alternate.
    Pistils numerous.
      Leaves without stipules . . . . . **Anonaceæ** 27
      Leaves with stipules . . . . . **Rosaceæ** 40

Pistil one.
Fruit a pod . . . . . **Tiliaceæ** 52
Fruit fleshy.
Ovary 1-celled; fruit a berry . . . . **Berberidaceæ** 31
Ovary 1-celled; fruit a drupe (stone fruit) . . **Drupaceæ** 44
Ovary 5-celled; fruit a pome (calyx fleshy) . . **Pomaceæ** 43
Leaves opposite . . . . . **Saxifragaceæ** 38

Herbs.
Pistils several.
Stamens on the receptacle . . . . . **Ranunculaceæ** 28
Stamens on the calyx . . . . . **Rosaceæ** 40
Pistil one.
Stamens separate or in 2 sets.
Sepals and petals colored alike . . . . **Begoniaceæ** 54
Sepals and petals unlike.
Fruit a berry . . . . . **Berberidaceæ** 31
Fruit a pod.
Leaves entire . . . . . **Portulacaceæ** 25
Leaves compound or toothed.
Sepals 2 . . . . . **Papaveraceæ** 33
Sepals 4 . . . . . **Capparidaceæ** 37
Stamens united into a column . . . . . **Malvaceæ** 52

b. *Stamens not more than 10*

Trees, shrubs, or woody vines.
Fruit fleshy.
Fruit a drupe (stone fruit) . . . . . **Cornaceæ** 58
Fruit a berry.
Stamens alternate with petals.
Leaves simple . . . . . **Grossulariaceæ** 40
Leaves compound . . . . . **Araliaceæ** 56
Stamens opposite petals . . . . . **Vitaceæ** 51
Fruit dry.
Pod 3-celled . . . . . **Hippocastanaceæ** 50
Pod 1-celled.
Stamens separate . . . . . **Cæsalpinaceæ** 44
Stamens united in 1 or 2 sets . . . . **Papilionaceæ** 45

Herbs.
Pistils more than one . . . . . **Crassulaceæ** 38
Pistil one.
Ovary 1-celled.
Corolla regular or nearly so.
Sepals 4 or 5.
Leaves alternate . . . . . **Saxifragaceæ** 38
Leaves opposite . . . . . **Caryophyllaceæ** 26
Sepals 2 . . . . . **Portulacaceæ** 25
Corolla irregular.
Stamens 6 in 2 sets . . . . . **Papaveraceæ** 33
Stamens 5 or 10.
One petal with spur at base . . . . **Violaceæ** 53
Petals not spurred . . . . . **Papilionaceæ** 45

Ovary 2- or 5-celled.
Ovary superior (appearing within the flower).
Ovary 2-celled . . . . . **Cruciferæ** 35
Ovary 5-celled.
Leaves simple.
Parasitic plants, not green . . **Monotropaceæ** 59
Green plants.
Flowers regular.
Anthers opening by holes at the apex **Pyrolaceæ** 58
Anthers opening lengthwise . **Geraniaceæ** 48
Flowers irregular . . . . . **Balsaminaceæ** 50
Leaves trifoliolate . . . . . **Oxalidaceæ** 49
Ovary inferior (appearing below the flower).
Fruit a berry . . . . . **Araliaceæ** 56
Fruit dry.
Fruit a 4 celled pod . . . . . **Onagraceæ** 55
Fruit splitting into 1-seeded halves . . **Umbelliferæ** 56

B. SYMPETALÆ

Corolla with petals united (*sympetalous*), at least at base.

1. *Stamens more numerous than the lobes of the corolla*

Ovary 1-celled.
Sepals 5 . . . . . **Papilionaceæ** 45
Sepals 2 . . . . . **Papaveraceæ** 33
Ovary 3 to many-celled.
Stamens separate.
Style 1.
Ovary superior . . . . . **Ericaceæ** 59
Ovary inferior . . . . . **Vacciniaceæ** 60
Styles 5 . . . . . **Oxalidaceæ** 49
Stamens united into a column . . . . . **Malvaceæ** 52

2. *Stamens as many as the lobes of the corolla or fewer*

Stamens opposite the corolla lobes . . . . . **Primulaceæ** 61
Stamens alternate with the corolla lobes, or fewer.

a. *Ovary superior* (appearing within the flower)

Corolla regular or nearly so.
Stamens as many as the corolla lobes.
Ovaries 2, separate . . . . . **Apocynaceæ** 64
Ovary 1.
Ovary deeply 4-lobed around the style.
Leaves alternate . . . . . **Boraginaceæ** 67
Leaves opposite . . . . . **Labiatæ** 69
Ovary not deeply lobed.
Ovary 1-celled.
Fruit an akene; leaves entire . . **Plantaginaceæ** 77
Fruit a pod; leaves toothed to compound **Hydrophyllaceæ** 66

Ovary 2- to 10-celled.
Stamens free from the corolla or nearly so . **Ericaceæ** 59
Stamens on the corolla tube.
Stamens 4.
Pod opening by a lid . . **Plantaginaceæ** 77
Pod not opening by a lid . . **Verbenaceæ** 68
Stamens 5.
Fruit of 2 or 4 seed-like nutlets . **Boraginaceæ** 67
Fruit a many-seeded pod or berry.
Filaments not woolly . . . **Solanaceæ** 72
Filaments or some of them woolly **Scrophulariaceæ** 74
Fruit a few-seeded pod.
Style 3-cleft . . . . **Polemoniaceæ** 65
Styles 1 or 2, entire or 2-cleft **Convolvulaceæ** 64
Stamens fewer than the corolla lobes.
Stamens 4 . . . . . **Verbenaceæ** 68
Stamens 2.
Stems naked . . . . . **Plantaginaceæ** 77
Stems leafy . . . . . **Scrophulariaceæ** 74
Corolla irregular.
Ovules and seeds solitary in the cells.
Ovary 4-lobed . . . . . **Labiatæ** 69
Ovary not lobed . . . . . **Verbenaceæ** 68
Ovules and seeds 2 or more in each cell.
Trees or woody vines . . . . . **Bignoniaceæ** 77
Herbs . . . . . **Scrophulariaceæ** 74

b. *Ovary inferior* (appearing below the flower)

Tendril-bearing herbs . . . . . **Cucurbitaceæ** 81
Not tendril-bearing.
Flowers not in an involucrate head.
Leaves alternate . . . . . **Campanulaceæ** 83
Leaves opposite.
Leaves with stipules . . . . . **Rubiaceæ** 78
Leaves without stipules . . . . . **Caprifoliaceæ** 79
Flowers in an involucrate head.
All the flowers with strap-shaped corollas . . . **Cichoriaceæ** 84
All but the ray flowers (and sometimes those) with tubular corollas **Compositæ** 84

I. TYPHACEÆ (Cat-tail Family)

Marsh or water herbs, with nerved and linear leaves, naked staminate and pistillate flowers in a compact cylindrical terminal spike, and a 1-celled ovary becoming a 1-seeded, nut-like fruit.

1. TÝPHA (Cat-tail Flag)

Tall herbs, with large grass-like leaves sheathing the base of the simple stem, which is terminated by a long and very dense cylindrical spike of flowers, the

upper part staminate and wilting, the lower part pistillate, more compact, and persistent.

1. **Tỳpha latifòlia.** Stems 4-6 ft. high, the leaves (½ to 1 in. broad) rising higher; staminate and pistillate parts of the spike contiguous. (See *Plant Structures*, p. 239, Fig. 221.) In marshes or on the borders of ponds and lakes.

II. SPARGANIACEÆ (Bur-reed Family)

Like *Typhaceæ*, but flowers in globular heads and with leaf-like bracts.

1. SPARGÀNIUM (Bur-reed)

Marsh or water herbs, with grass-like leaves sheathing the base of the stem, which branches above and bears scattered globular heads of flowers, the upper heads staminate, the lower larger and pistillate.

1. **Spargànium eurycárpum.** Stems 2 to 4 ft. high; fruit heads 1 in. broad, the fruit sessile, with the broad and depressed top abruptly tipped in the center. Borders of ditches, ponds, streams, etc.

III. ALISMACEÆ (Water-plantain Family)

Marsh or water herbs, with a basal cluster of ribbed, long-petioled leaves, naked branching stems, 3 green sepals, 3 white (sometimes pinkish) petals, 6 or more stamens, and numerous distinct ovaries becoming akenes.

1. **Alisma.** Flowers perfect; stamens 6; carpels in one circle.
2. **Sagittaria.** Staminate and pistillate flowers separate; stamens rarely few; carpels in dense heads.

1. ALÍSMA (Water-plantain)

Herbs with ovate to lanceolate leaves mostly rounded or heart-shaped at base, loose cluster of numerous small perfect flowers, usually 6 stamens, and numerous pistils in a circle.

1. **Alisma Plantàgo** or **Alisma Plantàgo-aquática.** Branching stem 1-2 ft. long; leaves 3-9-ribbed, with cross veinlets; fruit in a flat cluster, obliquely obovate, keeled on the back. Ditches, shallow water, etc.

2. SAGITTÀRIA (Arrowhead)

Herbs with arrow-shaped leaves, flowers in whorls of 3, the lower ones pistillate (with numerous pistils), the upper ones staminate (with numerous stamens), the flat and winged fruits forming dense globular heads. (See *Plant Relations*, p. 186, Fig. 163.)

1. **Sagittària variábilis** or **Sagittària latifòlia.** Stem ¼ to 4 ft. high; leaves exceedingly variable in shape; fruit obovate, with a long beak. In water or wet places.

IV. ARACEÆ (Arum Family)

Herbs, with acrid or pungent juice, thick or tuberous rootstocks, simple or compound leaves, small flowers crowded on a fleshy stalk (*spadix*), which is usually surrounded by a very large more or less showy bract (*spathe*), 4–6 sepals or none, no petals, and fruit usually a berry. (See *Plant Structures*, p. 243.)

* Spathe surrounding the spadix.

1. **Arisæma.** Flowers covering only the base of the cylindrical spadix; leaves compound.

2. **Richardia.** Flowers completely covering the cylindrical spadix; leaves arrow-shaped.

3. **Symplocarpus.** Flowers completely covering the globular spadix, which is surrounded by a fleshy shell-shaped spathe.

* * Spadix not surrounded by a spathe, but arising from the side of a 2-edged leaf-like stem.

4. **Acorus.** Spadix cylindrical.

1. ARISÆMA

Low herbs with a simple naked stem sheathed at base by the petioles of the 1 or 2 palmately compound and veiny leaves, a conspicuous spathe arched above and inclosing the spadix, which is elongated and naked above and bearing at its base small naked flowers, the upper consisting of a cluster of nearly sessile anthers, the lower of a single ovary.

1. **Arisæma triphýllum** (Indian Turnip. Jack-in-the-Pulpit). Leaves mostly 2, of 3 ovate-pointed leaflets; spadix thicker above, obtuse, shorter than the spathe, which is often variegated with white or purple, and hooded and pointed at summit. Rich woods. The turnip-shaped and wrinkled rootstock is intensely acrid. (See *Plant Structures*, p. 244, Fig. 225.)

2. **Arisæma Dracóntium** (Green Dragon). Leaf usually solitary, palmately divided into 7-11 oblong lanceolate leaflets; spadix tapering into a long and slender tip which extends beyond the greenish tube-like and pointed spathe. Low ground.

2. RICHÁRDIA

Herbs with a basal cluster of large arrow-shaped leaves, a broad spathe spreading above and surrounding the slender spadix, which is densely covered above with naked staminate flowers, and below with ovaries.

1. **Richárdia Africàna** (Calla Lily). Leaves glossy green and broad; spathes large and pure white. A native of South Africa and very common in cultivation.

3. SYMPLOCÁRPUS or SPATHYÈMA (Skunk Cabbage)

Herbs with a strong odor, a basal cluster of very large and broad entire veiny leaves preceded in earliest spring by the nearly sessile spathes which barely rise

out of the ground, are shell-like and very thick, and inclose a globular spadix densely covered with flowers consisting of 4 sepals, 4 stamens, and 1 ovary.

1. **Symplocárpus fétidus** or **Spathyèma fétida.** Leaves heart-shaped, short-petioled, becoming 1–2 ft. long ; spathe variegated with purple and yellowish green ; fruit a globular or oval mass 2–3 in. broad. Wet ground and bogs.

4. ÁCORUS (Sweet Flag. Calamus)

Herbs with aromatic rootstocks, 2-edged sword-like leaves, and 2-edged simple stems bearing on one edge the cylindrical spadix, which is densely covered with flowers containing 6 sepals, 6 stamens, and a solitary 2–3-celled ovary.

1. **Ácorus Cálamus.** Stem leaf-like and prolonged far beyond the spadix. Margins of streams, swamps, etc. (See *Plant Structures*, p. 219, Fig. 197.)

V. COMMELINACEÆ (Spiderwort Family)

Herbs with jointed and leafy stems, leaves flat and sheathing at base, 3 green sepals, 3 ephemeral petals, 6 stamens, a single style, and a superior 2- or 3-celled ovary becoming a pod.

1. TRADESCÁNTIA (Spiderwort)

Upright and nearly simple plants, with narrow leaves, blue flowers usually in terminal umbels, and blue-bearded filaments.

1. **Tradescántia Virginiàna.** Smooth or somewhat hairy, often tall and slender ; leaves lance-linear, tapering from base to tip. Rich ground. This represents a group of species rather than a single one.

VI. MELANTHACEÆ (Bellwort Family)

Like the *Liliaceæ*, but with rootstocks (instead of tubers), leaves always alternate, 6 stamens on the base of the perianth, and 3 styles (sometimes united at base).

1. **Uvularia.** Leaves perfoliate ; perianth segments acuminate ; pod flat on top.

2. **Oakesia.** Leaves sessile ; perianth segments not acuminate ; pod acutish.

1. UVULÀRIA (Bellwort)

Herbs, with short rootstocks, rather low stems naked below and forking above, oblong and perfoliate leaves with smooth margins, yellowish drooping flowers solitary on terminal peduncles, narrowly bell-shaped perianth of separate spatulate and pointed divisions, much shorter stamens with long anthers, and a blunt 3-lobed pod.

1. **Uvulària perfoliàta.** Glaucous throughout, ½–1½ ft. high, with 1–3 leaves below the fork ; leaves glabrous ; perianth granular-pubescent within ; stamens shorter than the styles, pointed at tip. Rich woods.

2. **Uvulària grandiflòra.** Not glaucous; stem naked below the fork or with a single leaf; leaves whitish-pubescent beneath; perianth smooth within; stamens longer than the styles, obtuse at tip. Rich woods.

2. OAKÈSIA

Like *Uvularia*, but rootstock slender, stem acutely angled, leaves sessile and clasping and with scabrous margins, 1 or 2 terminal flowers (soon appearing opposite the leaves), obtuse or acutish perianth divisions, and a pod acutish at each end, 3-angled and acutely winged.

1. **Oakèsia sessilifòlia** or **Uvulària sessilifòlia.** Leaves lance-oblong, acute at each end, pale beneath, sessile or partly clasping; anthers obtuse; pod short-stalked. Low woods.

VII. LILIACEÆ (Lily Family)

Herbs mostly from bulbs, with parallel-veined leaves, regular flowers, perianth of 6 divisions, 6 stamens on the receptacle or perianth tube, a single undivided style (sessile stigmas in *Tulipa*), and a superior 3-celled ovary becoming a pod. (See *Plant Structures*, p. 245.)

* Bulbous plants.

+ Stems leafy, especially above.

1. **Lilium.** Flower bell-shaped or funnel-form, the divisions spreading or recurved above.

+ + Stem 1- or 2-leaved at or toward the base, naked above.

2. **Tulipa.** Stem 1- or 2-leaved above the ground and bearing an erect large flower.

3. **Erythronium.** Stem 2-leaved from the ground and bearing a nodding flower.

+ + + Stem naked; leaves linear or nearly so.

++ Flowers in umbels.

4. **Allium.** Umbel of flowers from a 1- or 2-leaved scarious sheath; onion-scented.

++ ++ Flowers in racemes or spikes.

5. **Ornithogalum.** Perianth parted to the base; flowers white.

6. **Camassia.** Perianth parted to the base; flowers blue.

7. **Hyacinthus.** Perianth bell-shaped, 6-cleft, with spreading lobes.

* * Plants with tuberous rootstocks or fibrous roots; basal leaves often in large clumps.

8. **Hemerocallis.** Flowers yellow; leaves grass-like.

9. **Funkia.** Flowers blue or white; leaves ovate or heart-shaped, net-veined between the ribs.

1. LÍLIUM (Lily)

Herbs with scaly bulbs, simple stems, numerous scattered or whorled narrow sessile leaves, one to several large showy flowers, funnel-form or bell-shaped colored perianth with separate spreading or recurved divisions, and long filaments and style.

* Flowers white.

1. **Lílium cándidum** (Common White Lily). Stem 2–3 ft. high, with numerous scattered, mostly linear leaves; flowers bell-shaped, few to many, 2–3 in. long. Cultivated from the Old World. (See *Plant Structures*, p. 221, Fig. 201.)

* * Flowers nodding, orange-red, and black-spotted inside; leaves scattered.

2. **Lílium tigrìnum** (Tiger Lily). Stem 4–5 ft. high, with lanceolate leaves bearing bulblets in their axils; flowers numerous and mostly nodding, open funnel-shaped, the perianth divisions rolled back. Cultivated from China and Japan.

* * * Flowers erect, orange-red, and purple-spotted inside; leaves in whorls.

3. **Lílium Philadélphicum** (Wild Lily). Stem 1–2 ft. high, with lanceolate or linear leaves, mostly in whorls of 5–8; flowers 1–3, open bell-shaped, the sepals widely separate and with slender stalks. Dry or sandy ground.

2. TÙLIPA (Tulip)

Low bulbous herbs, with basal cluster of few leaves, a simple naked stem bearing a single large erect flower, bell-shaped perianth of separate broad divisions which are neither recurved nor spreading, and 3 short sessile stigmas.

1. **Tùlipa Gesneriàna** (Common Tulip). Leaves 3–6, broad; flower mostly in shades of red and yellow, the perianth segments very obtuse. Cultivated from Asia Minor.

3. ERYTHRÒNIUM (Dog-tooth Violet)

Low herbs, with a deep bulb, 2 smooth and shining flat elliptical or lanceolate leaves sheathing the base of the naked stem, which bears a single nodding flower, perianth of 6 separate and recurved or spreading divisions, and a long style.

1. **Erythrònium Americànum** (Yellow Adder-tongue). Leaves purple and white spotted; flowers light yellow. Rich ground. (See *Plant Relations*, p. 144, Fig. 144; or *Plant Structures*, p. 250, Fig. 231.)

2. **Erythrònium álbidum** (White Dog-tooth Violet). Leaves less or not at all spotted; flowers pinkish-white. Rich ground.

4. ÁLLIUM (Onion. Garlic)

Strong-scented herbs, with coated bulb, basal cluster of leaves, naked stem bearing a terminal umbel of small flowers, colored perianth of distinct (or nearly so) divisions, and a 3-lobed pod.

1. **Állium tricóccum** (Wild Leek). Stem 4–12 in. high, from clustered bulbs, bearing an erect umbel of numerous greenish-white flowers; leaves 2 or 3, elliptic-lanceolate, 5–9 in. long, appearing in early spring and dying before the flowers appear. Rich woods.

2. **Állium cérnuum** (Wild Onion). Stem 1–2 ft. high, from clustered bulbs, bearing a loose nodding umbel of few to many rose-colored flowers; leaves linear,

flattened and sharply keeled, 1 ft. long; sepals oblong-ovate, acute, shorter than the stamens.

3. **Állium Canadénse** (Wild Garlic). Stem 1 ft. high or more, from a solitary fibrous-coated bulb, bearing a densely bulbiferous or few-flowered umbel; leaves narrowly linear; sepals narrowly lanceolate, obtusish, equaling or exceeding the stamens. Moist meadows.

5. ORNITHÓGALUM (Star-of-Bethlehem)

Low bulbous herbs, with basal cluster of linear leaves, naked stem bearing a spreading cluster of white flowers, and perianth with spreading divisions.

1. **Ornithógalum umbellàtum.** Stem 4–9 in. high; flowers 5–8 on long and spreading pedicels; sepals green in the middle on the outside. Cultivated from Europe, and often escaped. (See *Plant Structures*, p. 247, Fig. 228.)

6. CAMÁSSIA or QUAMÁSIA

Bulbous herbs with basal cluster of linear leaves, simple naked stem bearing a raceme of pale blue flowers, perianth of 6 spreading divisions, a long and slender style, and a 3-angled ovary.

1. **Camássia Fràseri** or **Quamásia hyacínthina** (Eastern Camass. Wild Hyacinth). Stem 1 ft. high or more; flowers with bracts longer than the pedicels, ½–¾ in. long. Rich ground.

7. HYACÍNTHUS (Hyacinth)

Bulbous herbs with basal cluster of linear leaves, simple naked stem bearing a raceme of blue flowers, funnel-shaped or bell-shaped 6-cleft perianth with spreading lobes, and stamens inserted on the tube of the perianth.

1. **Hyacínthus orientàlis.** The common cultivated hyacinth from the Mediterranean region, made to vary greatly in color, and single or double.

8. HEMEROCÁLLIS (Day Lily)

Tall herbs, with fleshy-fibrous roots, long linear 2-ranked leaves at the base of the tall stem which bears at the summit several large yellow flowers, lily-like funnel-form perianth with short tube and spreading 6-parted limb, stamens with long slender filaments inserted on the tube, long slender style, and a 3-angled pod.

1. **Hemerocállis fúlva.** Flowers tawny orange, the inner perianth divisions wavy. Cultivated from Europe, and often escaped.

9. FÚNKIA

Herbs with a basal cluster of large ovate-heart-shaped ribbed and petioled leaves, naked stem bearing a raceme of white or blue flowers, funnel-form 6-cleft perianth with lobes hardly spreading, stamens inserted on the tube, and an oblong prismatic pod.

1. **Fúnkia subcordàta** (White Day Lily). Flowers white and long, tubular funnel-form. Cultivated from Japan and China. (See *Plant Structures*, p. 248, Fig. 229.)

VIII. CONVALLARIACEÆ (Lily-of-the-Valley Family)

Like the *Liliaceæ*, but with fibrous roots or thickened rootstocks, broad and often net-veined leaves, perianth divisions distinct or united, 1 or 3 styles, and fruit a berry.

* Leaves parallel-veined, mostly alternate.

+ Perianth of separate divisions; stamens on the receptacle, or nearly so.

1. **Clintonia.** Flowers in an umbel on a naked stem.
2. **Disporum.** Flowers single or few, hanging at the end of leafy spreading branches.
3. **Smilacina.** Flowers in terminal racemes on a leaf-bearing stem; perianth 6-parted.
4. **Maianthemum.** Flowers in racemes or a 2-leaved stem; perianth parts and stamens 4.

+ + Perianth bell-shaped or tubular; stamens on the tube.

5. **Convallaria.** Flowers nodding in a 1-sided raceme; perianth bell-shaped.
6. **Polygonatum.** Flowers nodding in the axils of the leaves; perianth tubular.

* * Leaves net-veined, all in one or two whorls on an otherwise naked stem.

7. **Trillium.** Perianth of 3 green sepals and 3 colored petals.

1. CLINTÒNIA

Herbs with slender creeping rootstocks, a basal cluster of 2–4 large oblong or oval ciliate leaves sheathing the base of a naked stem bearing an umbel of rather large flowers, a bell-shaped perianth of separate divisions, stamens inserted at their base, and an undivided style.

1. **Clintònia boreàlis.** Stem and leaves 5–8 in. long; umbel 3-6-flowered; flowers greenish yellow, ½–¾ in. long; berry blue. Cold moist woods.
2. **Clintònia umbellàta.** Flowers half as large as in the last, white with green or purplish dots; umbel many-flowered; berry black. Rich woods.

2. DÍSPORUM

Low downy herbs, with creeping rootstocks, erect leafy stems branched above, sessile ovate thin and transversely veined leaves, slender terminal peduncles bearing one or two greenish-yellow drooping flowers, a narrowly bell-shaped perianth with narrow divisions, long and slender filaments, an undivided style, and a red and pointed berry.

1. **Disporum lanuginòsum.** Leaves taper-pointed, downy beneath; perianth ½ in. long, soon spreading. Rich woods.

3. SMILACÌNA or VÁGNERA (False Solomon's Seal)

Herbs with simple leafy stems from thick or rather slender rootstocks, alternate veiny leaves which are sessile or nearly so, a terminal cluster of white flowers,

a 6-parted spreading perianth, an undivided short thick style, and a globular berry.

1. **Smilacìna racemòsa** or **Vágnera racemòsa.** Minutely downy, 1-3 ft. high; leaves numerous, oblong to lanceolate, abruptly somewhat petioled; flowers $\frac{1}{12}$ in. long, on very short pedicels in a compound cluster; berries pale red with purple spots. Moist woods and thickets.

2. **Smilacìna stellàta** or **Vágnera stellàta.** Nearly glabrous, 1 ft. high or less; leaves 7–12, oblong-lanceolate, slightly clasping; flowers $\frac{1}{8}$–$\frac{1}{4}$ in. long, on solitary pedicels in a simple few-flowered cluster; berries blackish. Moist ground.

4. MAIÁNTHEMUM or UNIFÒLIUM

Like *Smilacina*, but stem low, with 2 or 3 cordate leaves, flowers in a small simple cluster, each consisting of a 4-parted perianth, 4 stamens, and a 2-celled ovary.

1. **Maiánthemum Canadénse** or **Unifòlium Canadénse.** Pubescent or glabrous, 3–5 in. high; leaves lanceolate to ovate, sessile or nearly so. Moist woods.

5. CONVALLÀRIA (Lily of the Valley)

Low glabrous herbs, with slender rootstocks, 2 oblong basal leaves whose long sheathing petioles inwrap one another and appear stalk-like, a naked angled stem bearing a one-sided cluster of white and sweet-scented nodding flowers, a bell-shaped and 6-lobed perianth (lobes recurved), stamens included and inserted on the base of the perianth, a stout undivided style, and a red berry.

1. **Convallària majàlis.** Very commonly cultivated, and native in the southern Alleghanies.

6. POLYGONÀTUM (Solomon's Seal)

Herbs, with thick and knotted rootstocks, simple erect or curving stems which are naked below and bear above alternate sessile or half-clasping veiny leaves, axillary nodding greenish flowers, a cylindrical perianth 6-lobed at summit, stamens inserted on the perianth tube, a single style, and a globular berry.

1. **Polygonàtum biflòrum.** Smooth except the oblong, nearly sessile leaves; stem slender, 1–3 ft. high; peduncles 1-3-flowered; filaments rough, inserted toward summit of perianth tube. Rich woods.

2. **Polygonàtum gigantèum** or **Polygonàtum commutàtum.** Smooth throughout; stem stout, 2–7 ft. high; leaves ovate, partly clasping, or the upper nearly sessile, many-nerved; peduncles 2–8-flowered; filaments smooth, inserted at middle of perianth tube. Meadows and river banks.

7. TRÍLLIUM (Wake-robin)

Low herbs, with a short thick rootstock, a simple naked stem bearing at summit a whorl of 3 broad ribbed and net-veined leaves, a terminal large flower, 3 spreading green sepals, 3 white or purple petals, short filaments, 3 styles, and an ovate-angled or winged berry. (See *Plant Structures*, p. 246, Fig. 227.)

* Ovary and fruit 6-angled.

+ Flower sessile, dark purple.

1. **Trillium séssile.** Leaves sessile, ovate, often spotted; sepals spreading; petals sessile; fruit globose. Rich woods.

2. **Trillium recurvàtum.** Leaves narrowed at base into a petiole, ovate to obovate; sepals reflexed; petals narrowed at base into a stalk; fruit ovate. Rich woods.

+ + Flower on a pedicel; leaves broadly rhombic-ovate.

++ Pedicel longer than flower; filaments shorter than anthers.

3. **Trillium eréctum.** Pedicel 1–3 in. long, more or less inclined or turned downward; petals ovate to lanceolate, ¾–1½ in. long, brown-purple, white, greenish, or pinkish; styles stout, spreading, or recurved; fruit ovate. Rich woods.

4. **Trillium grandiflòrum.** Pedicel erect or ascending; petals oblanceolate, 1½–2½ in. long, white turning rose-color or marked with green; styles very slender, erect or nearly so; fruit globose. Rich woods.

++ ++ Pedicel short, recurved, or strongly turned downward; filaments about equaling anthers.

5. **Trillium cérnuum.** Petals white or pink, ovate to lanceolate, ½–1 in. long, wavy and recurved-spreading; styles stout and recurved; fruit ovate. Rich woods.

* * Ovary and fruit 3-lobed; pedicel erect or inclined; leaves petioled.

6. **Trillium nivàle.** Small, 2–4 in. high; leaves oval or ovate, obtuse; petals oblong, obtuse, white; styles long and slender; fruit flattened globose. Rich woods.

IX. SMILACEÆ (Smilax Family)

Chiefly woody-stemmed plants climbing or supported by tendrils, with broad 3–9-ribbed and net-veined leaves, small flowers (staminate and pistillate on different plants) in axillary umbels, perianth of 6 divisions, 6 stamens, and a 3-celled ovary becoming a berry.

1. SMÌLAX

Shrubby or herbaceous, with usually heart-shaped simple leaves, small greenish or yellowish flowers, and a bluish-black berry. (See *Plant Relations*, p. 61, Fig. 51.)

1. **Smilax herbàcea** (Carrion Flower). Stems herbaceous, not prickly, usually climbing high; leaves ovate or rounded, heart-shaped or truncate at base, 7-9-nerved; peduncles much longer than the petioles and sometimes the leaves, bearing 20-40 carrion-scented flowers. Moist ground or near water.

2. **Smilax rotundifòlia** (Common Greenbrier). Stems woody and armed with scattered prickles; leaves broad, usually slightly heart-shaped, 5-9-nerved, the 3 middle ribs the most conspicuous; peduncles shorter or scarcely longer than the petioles. Thickets, especially among brambles.

X. AMARYLLIDACEÆ (Amaryllis Family)

Herbs with leaves and naked stem from a bulb, a 6-parted colored perianth, 6 stamens, a single style, and an inferior 3-celled ovary becoming a pod.

* Perianth tubular, with a distinct crown on the throat.

1. **Narcissus.** Stem with 1 or more flowers; stamens included in the cup.

* * Perianth not tubular, and with no crown.

2. **Galanthus.** Stem usually with a single small nodding flower; perianth divisions unlike, the 3 inner shorter and notched; anthers pointed.

3. **Leucoium.** Stem with 1-7 nodding flowers; perianth divisions alike; anthers blunt.

1. NARCÍSSUS

Herbs with a basal cluster of linear leaves, a simple stem bearing 1 or more flowers from a scarious sheath, a perianth with cylindrical tube and 6 widely spreading lobes, and a conspicuous crown on the throat of the perianth.

1. **Narcissus Pseudo-Narcissus** (Daffodil). Stem with 1 large yellow flower with a short and broad tube, and a large bell-shaped crown (as long as the perianth lobes or longer) with a wavy-toothed or crisped margin. Cultivated from Europe.

2. **Narcissus poeticus** (Poet's Narcissus). Stem with 1 white flower with a crown edged with pink and scarcely projecting from the yellowish throat. Cultivated from Southern Europe.

3. **Narcissus Jonquilla** (Jonquil). Stem with 2-5 small yellow and very fragrant flowers with slender tube, and lobes spreading horizontally and much exceeding the crown. Cultivated from southern Europe.

2. GALÁNTHUS (Snowdrop)

Low herb, with a pair of pale linear basal leaves, a slender stem usually bearing a single small flower on a nodding pedicel, a perianth of 6 oblong and separate sepals (the 3 inner shorter, less spreading, and notched), and pointed anthers.

1. **Galánthus nivàlis.** Stem 3-6 in. high, bearing a delicate drooping white flower, the inner divisions tipped with green. Common in cultivation.

3. LEUCÓIUM (Snowflake)

Like *Galanthus*, but larger, the stem more leafy at base, and bearing 1-7 flowers on nodding pedicels, the perianth divisions oval and all alike, and the anthers blunt.

1. **Leucòium vérnum.** Stem about 1 ft. high, mostly 1-flowered. Cultivated from Europe.

XI. IRIDACEÆ (Iris Family)

Herbs with erect 2-ranked leaves, a 6-cleft petal-like perianth, 3 distinct or united stamens, a single 3-cleft style, and an inferior 3-celled ovary becoming a many-seeded pod.

* Stems leafy.

1. **Iris.** Perianth of 3 outer recurving and 3 inner erect or incurving divisions; stamens separate.

2. **Sisyrinchium.** Perianth deeply cleft into spreading similar divisions; stamens united to the top.

3. **Belamcanda.** Perianth parted to the base into nearly equal spreading divisions: stamens separate.

* * Leaves and flowers from a bulb.

4. **Crocus.** Perianth with a long and slender tube.

1. ÌRIS (Iris. Flag. Flower-de-Luce)

Tall herbs with thick rootstocks, tall and often branching stems with sword-shaped leaves and large showy flowers, a 6-cleft perianth with tube prolonged beyond the ovary and large lobes (the 3 outer spreading or reflexed, the 3 inner smaller and erect), separate stamens, petal-like style branches, and an angled pod.

1. **Ìris versícolor** (Large Blue Flag). Stem stout, 1–3 ft. high; flowers violet-blue, variegated with green, yellow, or white, and purple-veined, 2–3 in. long. Wet places. (See *Pl. R.* and *Pl. St.*, p. 126, Fig. 132; or *Plant Structures*, p. 251, Fig. 232.)

2. SISYRÍNCHIUM (Blue-eyed Grass)

Low slender herbs, with fibrous roots, grass-like or lanceolate leaves, 2-edged or winged stems, a cluster of delicate blue flowers from a 2-leaved sheath, a 6-parted perianth with spreading divisions, stamens united to the top, and a globular pod. Many species have been described, but they were formerly mostly included in the following:

1. **Sisyrínchium angustifòlium.** Stem 4–12 in. high; flowers delicate blue, becoming purplish (rarely white), the divisions of the perianth more or less notched and bristle-pointed, and ciliate. Moist meadows.

3. BELAMCÁNDA or GEMMÍNGIA (Blackberry Lily)

Tall herbs, with rootstock and leaves as in *Iris*, loosely many flowered, a 6-parted orange-yellow and purple-spotted spreading perianth, separate stamens, and a pear shaped pod which opens and discloses the blackberry-like cluster of globose, black, and fleshy-coated seeds.

1. **Belamcánda Chinénsis** or **Gemmíngia Chinénsis.** The branching stems 3–4 ft. high. Cultivated from China and Japan, and sometimes escaped.

4. CRÒCUS

Low bulbous herbs, with a basal cluster of leaves with revolute margins, the flower arising directly from the bulb-like rootstock, a perianth with long slender tube and 6 roundish lobes (fully spreading only in sunshine), and the ovary and pod seldom raised above ground. Several species are cultivated, varying widely in color (often variegated) and in time of blooming.

1. **Cròcus vérnus.** Leaves 2–4, equaling the flowers, whitish beneath; perianth segments 1–1½ in. long, lilac or white and often striped with purple. Cultivated from Europe.

XII. ORCHIDACEÆ (Orchis Family)

Herbs with alternate leaves, very irregular and often showy flowers, 3 petal-like sepals, 3 petals (the lower one different from the others and called the *lip*), a central *column* composed of blended stamens and style, and an inferior 1-celled ovary becoming a pod with innumerable very minute seeds. (See *Plant Structures*, p. 249; also Figs. 235–237; also *Pl. R.* and *Pl. St.*, p. 127, Fig. 133; also Figs. 137–142.)

* Bulbous, with naked stem and 1 or 2 basal leaves; lip not spurred.

\+ Basal leaves 2.

1. **Liparis.** Flowers purplish; petals thread-like; lip flat, entire, obovate.

\+\+ Basal leaf solitary.

2. **Calopogon.** Leaf grass-like; sepals and petals spreading; lip dilated at summit and bearded on the upper side.

3. **Arethusa.** Leaf linear; sepals and petals arching over the column; lip dilated at tip, not bearded.

4. **Calypso.** Leaf ovate, thin; flower solitary; lip an inflated sac, larger than the rest of the flower.

* * Roots fleshy, fibrous; basal leaves 2; lip spurred.

5. **Orchis.** Leaves large, obovate; lip turned downward; sepals and petals forming a hood.

* * * Brownish or yellowish herbs with branched and coral-like rootstocks and no green leaves.

6. **Corallorhiza.** Flowers small, dull, racemed.

* * * * Leafy plants with tufted, fibrous roots and few showy flowers.

7. **Cypripedium.** Sepals and petals spreading; lip a large, inflated sac.

1. LÍPARIS or LEPTÓRCHIS (Twayblade)

Low bulbous herbs, with 2 basal leaves, a short naked stem bearing a raceme of few purplish or greenish flowers, linear sepals, thread-like spreading petals, flat entire lip, and an elongated incurved column.

1. **Líparis liliifòlia** or **Leptórchis liliifòlia.** Leaves ovate; petals reflexed; lip ½ in. long, wedge obovate, abruptly short pointed, brown-purplish. Moist woods.

2. CALOPÒGON or LIMODÒRUM

Bulbous herbs, with naked stem sheathed below by the base of the single grass like leaf and bearing several large flowers, distinct and spreading nearly similar sepals and petals, lip on the upper or inner side of the flower distant from the column, raised on a stalk, dilated at summit, and strongly bearded on the upper side, column slender and winged at apex.

1. **Calopògon pulchéllus** or **Limodòrum tuberòsum.** Stem about 1 ft. high, 2 6-flowered; flowers 1 in. broad, pink-purple; lip beautifully bearded with white, yellow, and purple hairs. Bogs.

3. ARETHÙSA

Low bulbous herb, with the solitary linear leaf hidden in the sheaths of the stem until after flowering, a single terminal large rose-purple flower, nearly similar sepals and petals united at base and arching over the column, lip dilated and recurved toward the tip, and column petal-like and dilated at apex.

1. **Arethùsa bulbòsa.** Flower erect, 1–2 in. long; lip bearded-crested down the face. Bogs.

4. CALÝPSO

A small bulbous bog herb, with a single ovate thin leaf, a short naked stem bearing a large and showy (variegated purple, pink, and yellow) flower, nearly similar spreading pointed sepals and petals, a sac-shaped inflated lip larger than the rest of the flower, and a broadly winged petal-like column.

1. **Calýpso boreàlis** or **Calýpso bulbòsa.** Stem 3–5 in. high; lip woolly-hairy inside. Cold bogs and wet woods.

5. ÓRCHIS

Low herbs, with fleshy-fibrous roots, 1 or 2 basal leaves, a naked stem bearing a few showy flowers, nearly equal sepals and petals, and lip turned downward and spurred below.

1. **Órchis spectábilis.** Stem 4–7 in. high; leaves 2, oblong-obovate and shining, 3–6 in. long; sepals and petals united to form the vaulted hood, pink-purple, the undivided lip white. Rich woods.

6. CORALLORHÌZA (Coral-root)

Brownish or yellowish herbs, with much-branched and coral-like rootstocks, no green leaves, a raceme of small dull flowers, oblique perianth of nearly similar sepals and petals, lip spreading at apex and bearing a pair of projecting ridges, and a 2-edged straightish column.

1. **Corallorhìza odontorhìza.** Stem bulbous-thickened at base, 6–16 in. high, 6–20 flowered; lip entire, thin, broadly ovate or obovate, abruptly contracted into a stalk-like base. Rich woods.

7. CYPRIPÈDIUM (Lady-slipper. Moccasin Flower)

Herbs with tufted fibrous roots, large many-nerved leaves sheathing at the base, solitary or few large and showy flowers, spreading sepals, usually narrow petals, lip a large inflated sac, and a declined column.

1. **Cypripèdium parviflòrum.** Stem 1-2 ft. high; leaves oval and pointed; sepals and wavy-twisted petals brownish, the former ovate to lanceolate; lip flattish from above, bright yellow, 1 in. long or less. Bogs and damp woods.

2. **Cypripèdium pubéscens** or **Cypripèdium hirsùtum.** Like the last, but taller and pubescent; leaves broadly oval and acute; sepals elongated lanceolate; lip flattened laterally, 1½–2 in. long, pale yellow. Bogs and damp woods.

3. **Cypripèdium acaùle.** Downy, with naked stem 8–12 in. high, bearing 2 oblong leaves at base, a green bract at top, and a single flower; sepals and petals greenish, shorter than the drooping rose-purple (rarely white) veiny lip, which is nearly 2 in. long and has a closed fissure down its whole length in front. Dry or moist woods. (See *Pl. R.* and *Pl. St.*, p. 132, Fig. 137; or *Plant Structures*, p. 253, Fig. 236.)

XIII. SAURURACEÆ (Lizard-tail Family)

Herbs with jointed stems, alternate entire leaves, naked flowers in spikes, 6 or 7 stamens, and 3–5 more or less separate pistils becoming somewhat fleshy in fruit.

1. SAURÙRUS (Lizard-tail)

Marsh herbs, with heart-shaped ribbed petioled leaves, a long slender terminal spike of white flowers, and carpels united at base and becoming wrinkled in fruit.

1. **Saurùrus cérnuus.** Spike nodding at the end; filaments long and slender. Swamps. (See *Plant Structures*, p. 219, Fig. 195.)

XIV. JUGLANDACEÆ (Walnut Family)

Large trees with alternate pinnately compound leaves, staminate and pistillate flowers on the same plant, the former in aments with an irregular calyx, the latter solitary or in a small cluster with a regular 3–5-lobed calyx, stamens 3–40, and fruit a bony nut invested by a hull.

1. **Juglans.** Stamens 12–40; hull not splitting; nut rough.
2. **Carya.** Stamens 3–10; hull splitting into 4 pieces; nut smooth.

1. JÙGLANS (Walnut)

Trees with odd-pinnate leaves of many serrate leaflets, long lateral staminate aments, solitary or clustered pistillate flowers (with 4-toothed calyx and 4 small petals), 12–40 stamens, 2 short styles, a 2–4-celled ovary, and a rough irregularly furrowed nut inclosed in a hull which does not open. The embryo (chiefly of cotyledons) sweet and edible. (See *Pl. R.* and *Pl. St.*, p. 82, Fig. 76.)

1. **Jùglans cinèrea** (Butternut. White Walnut). Tree 50–75 ft. high, with gray bark; the petioles and branchlets downy with clammy hairs; leaflets 5–8 pairs, downy especially beneath; fruit oblong, clammy, pointed, the nut deeply sculptured and rough with ragged ridges. Rich woods.

2. **Jùglans nìgra** (Black Walnut). Tree often 90–150 ft. high, with rough brown bark ; leaflets 7–11 pairs, smooth above, the lower surface and the petioles minutely downy ; fruit spherical, roughly dotted, the nut corrugated. Rich woods.

2. CÁRYA or HICÒRIA (Hickory)

Trees with pinnate leaves, slender lateral and clustered staminate aments, pistillate flowers in clusters of 2–5 (with 4-toothed calyx and no petals), 3–10 stamens, 2 or 4 short styles, a 2–4-celled ovary, and a smooth nut inclosed in a hull which splits into 4 pieces.

1. **Cárya álba** or **Hicòria ovàta** (Shell-bark or Shag-bark Hickory). Tree 70 90 ft. high or more, with trunk covered with shaggy bark, which peels off in rough strips ; leaflets 5–7, serrate, the lower pair much smaller ; fruit globular ; nut white, flattish, globular with thin shell.

XV. SALICACEÆ (Willow Family)

Trees or shrubs with alternate undivided leaves, staminate and pistillate flowers in aments on different plants, no calyx or corolla, 2–30 stamens, a 1-celled ovary, and fruit a pod containing numerous seeds with long silky down. (See *Plant Structures*, p. 257.)

1. **Salix.** Bracts of the ament entire ; stamens few ; buds with a single scale.

2. **Populus.** Bracts of the ament cut-lobed at apex ; stamens numerous ; buds scaly.

1. SÀLIX (Willow)

Trees or shrubs, generally growing along streams, with lithe branches, mostly long and pointed leaves, 1 flower to each bract of the ament, and 2 stamens. (See *Plant Structures*, p. 219, Fig. 196, and p. 257, Fig. 240.)

1. **Sàlix cordàta.** Shrub 4–10 ft. high ; leaves lanceolate, rounded or tapering at base, sharply serrate, smooth ; stipules usually large and conspicuous, serrate ; pods glabrous, tapering, pointed, slender-stalked ; flowers slightly earlier than the leaves. Along streams.

2. PÓPULUS (Poplar. Aspen)

Trees with broad and more or less heart-shaped or ovate-toothed leaves, scaly buds, one flower to each bract of the ament, 8–30 or more stamens, and 2–4 elongated styles.

1. **Pópulus tremulòides** (American Aspen). Small tree 20–50 ft. high, with smooth greenish-white bark ; leaves roundish heart-shaped, with a short sharp point and small regular teeth, smooth on both sides, with downy margins, on slender petioles laterally flattened ; bracts of the ament cut into 3 or 4 deep linear divisions, fringed with long hairs ; stamens 6–20.

2. **Pópulus grandidentàta.** Tree 60–75 ft. high, with smoothish gray bark ; leaves roundish ovate, with large and irregular teeth, when young densely covered with white silky wool, at length smooth on both sides ; scales cut into 5 or 6 unequal small divisions slightly fringed ; petioles and stamens as in the last. Rich woods and borders of streams.

3. **Pópulus monilífera** or **Pópulus deltoides** (Cottonwood). Tree 75–150 ft. high; leaves broadly deltoid, with numerous crenate teeth and narrowly acuminate, sometimes ovate, rarely heart-shaped, or elongated petioles; scales cut-fringed, not hairy; stamens 60 or more. Borders of streams. (See *Pl. R.* and *Pl. St.*, p. 70, Fig. 61.)

XVI. BETULACEÆ (Birch Family)

Trees or shrubs with alternate simple straight-veined leaves, staminate flowers in elongated aments, fertile flowers in long or short aments, 1–5 sepals or none, 2–8 stamens, and a 2-celled ovary becoming a nut (with or without a wing).

1. **Betula.** Stamens 2; scales thin, 3-lobed, falling with the winged nuts.
2. **Alnus.** Stamens 4; scales thick, entire, persisting after the nuts have fallen.
3. **Corylus.** Stamens 8; the large bony nut inclosed in a leafy involucre.

1. BÉTULA (Birch)

Trees or shrubs with outer bark usually separable in sheets and that of the branchlets dotted, scaly buds, long and drooping terminal and lateral staminate aments with peltate scales (with calyx of 1 scale and 4 stamens), oblong or cylindrical, usually terminal, pistillate aments, 3-lobed scales (with a single naked 2-celled ovary), 2 or 3 flowers to each scale of the ament, and fruit a broadly winged and scale-like nutlet. (See *Pl. R.* and *Pl. St.*, p. 71, Fig. 62.)

* Trees with dark-brown close bark and sessile very thick fruiting aments.

1. **Bétula lénta** (Sweet or Black Birch). Tree 50–75 ft. high, with very sweet aromatic bark and reddish bronze-colored spray; leaves thin, ovate, more or less heart-shaped, acuminate, sharply and finely serrate; wing of fruit not broader than body. Rich woods.

* * Trees with chalky-white bark separable in thin sheets, and pendulous slender-stalked and smooth fruiting aments.

2. **Bétula papyrífera** (Paper or Canoe Birch. White Birch). Tree 50–75 ft. high; leaves ovate, taper-pointed, sharply serrate; wing of fruit much broader than body.

* * * Tree with greenish-brown bark and soft downy-stalked fruiting aments.

3. **Bétula nìgra** (River or Red Birch). Tree 50–75 ft. high, with reddish twigs; leaves ovate, acutish at both ends, irregularly serrate, whitish downy beneath; petioles, peduncles, and oblong aments tomentose; fruit broadly winged. Banks of streams.

* * * * Shrubs with brownish bark, small thick leaves, and smooth erect fruiting aments.

4. **Bétula pùmila** (Low Birch). Shrubs 2–8 ft. high; leaves obovate, roundish, or orbicular, pale beneath, finely reticulated; wing of fruit mostly narrower than body. Bogs.

2. ÁLNUS (Alder)

Shrubs or small trees with flowers in terminal aments and developed before the leaves, elongated and drooping staminate aments (3 flowers to each scale, a 3–5-parted calyx, and as many stamens), ovoid or oblong pistillate aments (2 or 3 flowers to each fleshy scale, calyx of 4 small scales, and a 2-celled ovary), and a wingless fruit. (See *Plant Structures*, p. 257, Fig. 241.)

1. **Álnus serrulàta** or **Álnus rugòsa.** A shrub forming dense thickets; leaves obovate, acute at base, sharply and minutely serrate, thickish; scales of the fertile ament becoming thick and woody in fruit. Borders of streams and swamps.

3. CÓRYLUS (Hazelnut)

Shrubs with toothed leaves, staminate flowers in drooping cylindrical aments (consisting of 8 stamens), pistillate flowers several in a scaly bud (consisting of a single 2-celled ovary), and fruit a globular bony nut inclosed in a leafy cup consisting of 2 enlarged bracts.

1. **Córylus Americàna.** Forming thickets; leaves roundish heart-shaped; involucre open above down to the nut, the 2 broad inclosing bracts cut-toothed and almost distinct.

XVII. FAGACEÆ (Beech Family)

Trees with alternate simple leaves, staminate flowers in slender aments or small heads, fertile flowers 1 or 2 inclosed in a small cup which becomes hard and more or less surrounds the nut, 4–7-lobed calyx, no petals, and 3–20 stamens.

1. **Quercus.** Staminate flowers in slender aments; nut roundish, not completely inclosed by the cup.

2. **Fagus.** Staminate flowers in a small head; nuts sharply triangular, completely inclosed by the prickly cup.

1. QUÉRCUS (Oak)

Trees with greenish or yellowish flowers, staminate flowers in slender aments (with 2–8-lobed calyx and 3–12 stamens), pistillate flowers scattered or somewhat clustered), a nearly 3-celled ovary inclosed by a scaly involucre which becomes a hard cup around the base of the nut or acorn.

1. **Quércus álba** (White Oak). Large trees with pale, often scaly bark; mature leaves smooth, pale beneath, bright green above, obovate or oblong, obliquely cut into 3–9 oblong or linear lobes; cup saucer-shaped, much shorter than the ovoid or oblong acorn. (See *Pl. R.* and *Pl. St.*, p. 69, Fig. 60; or *Plant Structures*, p. 255, Fig. 238.)

2. FÀGUS (Beech)

Tall trees with close and smooth gray bark, horizontal spray, undivided strongly straight-veined leaves, staminate flowers in small heads on drooping stalks (with a bell-shaped 5–7-cleft calyx and 8–16 stamens), pistillate flowers usually in pairs at the apex of a short stalk (with calyx of 6 slender lobes), a 3-celled

ovary with 3 thread-like styles, and sharply 3-sided nuts, usually 2 in each 4-valved prickly involucre.

1. **Fàgus ferruginea** or **Fàgus Americàna** (American Beech). Tree 75-100 ft. high; leaves oblong, ovate, taper-pointed, often coarsely toothed; prickles of the fruit mostly recurved or spreading.

XVIII. ULMACEÆ (Elm Family)

Trees with alternate serrate pinnately veined leaves, 4-9 cleft calyx, no petals, 4–9 stamens, 2 styles, and a 1 2-celled ovary becoming a winged or berry-like fruit.

1. **Ulmus.** Flowers preceding the leaves; fruit winged all around.
2. **Celtis.** Flowers appearing with the leaves; fruit berry-like.

1. ÚLMUS (Elm)

Large trees with purplish or yellow flowers in lateral clusters preceding the leaves, a 5-9-lobed calyx, as many stamens with long slender filaments, 2 short styles, and a fruit winged all around. (See *Pl. R.* and *Pl. St.*, p. 67, Fig. 58; p. 68, Fig. 59; p. 75, Fig. 65; also *Plant Structures*, p. 220, Fig. 198; p. 256, Fig. 239.)

1. **Úlmus Americàna** (American or White Elm). A large tree, usually with spreading branches and drooping smooth branchlets; leaves obovate-oblong or oval, abruptly pointed, sharply serrate, smooth above and pubescent beneath or soon smooth; flowers in close clusters, on slender drooping stalks; fruit ovate, smooth except the margins. Rich moist soil.

2. **Úlmus fúlva** (Slippery or Red Elm). A tree 45-60 ft. high, with very mucilaginous inner bark; branchlets downy; leaves ovate-oblong, taper-pointed, serrate, downy beneath and very rough above; flowers nearly sessile; fruit orbicular. Rich soil.

2. CÉLTIS (Hackberry)

Small or large trees resembling elms, but flowers appearing with the leaves, and fruit fleshy inclosing a stone (*drupe*).

1. **Céltis occidentàlis.** Leaves reticulate, heart-shaped, ovate, or lanceolate, taper-pointed, sharply serrate; fruit reddish or yellowish, becoming dark purple, as large as small cherries, sweet and edible. Woods and river banks.

XIX. MORACEÆ (Mulberry Family)

Trees or shrubs with alternate leaves, staminate and pistillate flowers in separate clusters, 4-parted calyx becoming fleshy in fruit, no petals, 4 stamens opposite the sepals, 2 slender styles, and a 2-celled ovary becoming an akene covered by the fleshy calyx.

1. MÒRUS (Mulberry)

Trees with broad-toothed leaves, flowers in separate axillary spikes, the whole pistillate spike becoming a thick oblong and juicy compound fruit.

1. **Mòrus rùbra** (Red Mulberry). Large tree; leaves heart-shaped, serrate, rough above and downy beneath, often lobed on young shoots; fruit dark purple, long. Rich woods.

XX. ARISTOLOCHIACEÆ (Birthwort Family)

Low herbs or twining shrubs with long-petioled heart-shaped leaves, conspicuous lurid calyx, no petals, 6–12 stamens, and a 6-celled ovary which forms a globular pod.

1. ÁSARUM (Wild Ginger)

Herbs with aromatic creeping rootstocks, a pair of kidney-shaped basal leaves, a solitary short-stalked flower close to the ground, a bell-shaped 3-cleft calyx, 12 stamens with pointed tips, a short 6-lobed style, and a rather fleshy globular pod.

1. **Ásarum Canadénse.** Soft-hairy; leaves (often with satin sheen) more or less pointed, 4–5 in. broad when full-grown; calyx lobes widely and abruptly spreading, brown-purple inside. Hillsides in rich woods.

XXI. POLYGONACEÆ (Buckwheat Family)

Herbs with alternate entire leaves, stipules in the form of sheaths above the swollen joints of the stem, 3–6-cleft calyx, no petals, 4–8 stamens, and a 1-celled ovary usually becoming a 3-angled nut-like fruit (*akene*).

* Sepals 6, the outer row reflexed, the inner erect and enlarging in fruit.

1. **Rumex.** Stigmas 3; coarse weeds.

* * Sepals 5, equal and erect in fruit.

2. **Polygonum.** Leaves oblong to lanceolate; embryo curved around one side of the seed.

3. **Fagopyrum.** Leaves triangular heart-shaped; embryo in the center of the seed.

1. RÙMEX (Dock)

Coarse herbs with often large leaves, clusters of small mostly greenish flowers, calyx of 6 sepals (3 outer spreading in fruit, 3 inner larger and somewhat colored, enlarged after flowering, veiny, and closing over the nut-like fruit), 6 stamens, and 3 styles.

1. **Rùmex crìspus** (Curled Dock). Smooth, 3–4 ft. high; leaves with strongly wavy-curled margins, lanceolate and acute, lower ones truncate at base; flowers in long slender crowded racemes which are leafless above. Common in cultivated and waste ground. Weed from Europe.

2. **Rùmex Acetoséllа** (Sheep Sorrel). Low, 6 to 12 in. high, with sour herbage; leaves narrow-lanceolate or linear, at least the lower ones halberd-form; flowers small, in a terminal naked spray-like cluster. Common everywhere.

2. POLÝGONUM (Knotweed. Smartweed)

Herbs with conspicuous stipules sheathing the prominent joints of the stem, small flowers, a 5-parted often petal-like calyx, 4-9 stamens, 2 or 3 styles, and a triangular or lens-shaped akene.

1. **Polýgonum aviculàre.** Slender and smooth, mostly prostrate or ascending, leafy throughout; leaves oblong to lanceolate, acutish; sheaths 2-lobed or lacerate; flowers in axillary clusters or in spikes with leafy bracts; sepals very small, green with pinkish margins; stamens 8 (rarely 5); styles 3; nut dull and minutely granular. Yards and waste places.

2. **Polýgonum Persicària** (Lady's Thumb). Nearly smooth, 1-1½ ft. high; leaves lanceolate, pointed, roughish, often with a dark spot near the middle; sheaths bristly; flowers greenish-purple, in dense erect oblong spikes; stamens mostly 6; style 2- or 3-cleft; nut flattened or triangular, smooth and shining. Waste and damp places. Weed from Europe.

3. FAGOPŸRUM (Buckwheat)

Smooth erect herbs with triangular heart-shaped or halberd-shaped leaves, terminal clusters of white flowers often tinged with green or rose color, a petal-like 5-parted calyx, 8 stamens, and 3 styles.

1. **Fagopŷrum esculéntum** or **Fagopŷrum Fagopŷrum.** Flower with 8 honey glands between the stamens; nut acute, smooth and shining. Old fields and thickets. Cultivated from Europe.

XXII. PORTULACACEÆ (Purslane Family)

Herbs with entire fleshy leaves, 2 separate or united sepals, 5 petals, 5–20 stamens, a 2–8-parted style, and a 1-celled pod.

1. **Portulaca.** Stamens 7–20; pod opening by a lid.
2. **Claytonia.** Stamens 5; pod splitting into 3 pieces.

1. PORTULÀCA (Purslane)

Low herbs, with scattered leaves, sessile flowers, 2-cleft calyx, 5 or 6 ephemeral petals, 7–12 stamens, a 5- or 6-parted style, and a globular pod opening by a lid.

1. **Portulàca oleràcea.** Prostrate and smooth; leaves obovate or wedge-form; petals pale yellow. Cultivated and waste ground.

2. CLAYTÒNIA (Spring-beauty)

Low herbs in early spring from a small deep tuber, with a pair of opposite leaves, a loose cluster of rose-color or white (deeper-veined) flowers, 2 distinct ovate sepals, 5 petals, 5 stamens, and a 3-cleft style.

1. **Claytònia Virgínica.** Leaves linear-lanceolate, 3–6 in. long. Moist open woods. (See *Pl. R.*, p. 196, Fig. 164 *b*; also *Pl. St.*, p. 191, Fig. 169.)

XXIII. CARYOPHYLLACEÆ (Pink Family)

Herbs with opposite entire leaves, usually 5 sepals (united or separate), 5 petals, 10 stamens (sometimes fewer), 2–5 styles, and a 1-celled ovary becoming a pod.

* Sepals united into a tube or cup ; petals on slender stalks.

+ Calyx with scaly bracts or small leaves at base.

1. **Dianthus.** Calyx mostly cylindrical ; styles 2.

+ + Calyx naked.

2. **Saponaria.** Calyx round or 5-angled, obscurely nerved ; styles 2.
3. **Silene.** Calyx 5-toothed, 10-nerved ; styles 3.
4. **Lychnis.** Calyx 5-toothed, 10-nerved ; styles 5, rarely 4.

* * Sepals distinct or nearly so ; petals without slender stalks.

5. **Stellaria.** Petals 2-cleft ; styles usually 3.

1. DIÁNTHUS (Pink. Carnation)

Ornamental herbs, with stems swollen at the joints, showy flowers, a cylindrical striate 5-toothed calyx with scaly bracts or small leaves at base, petals with slender stalk-like base, 10 stamens, and 2 styles.

1. **Diánthus barbàtus** (Sweet William. Bunch Pink). Leaves oblong-lanceolate, green ; flowers of various colors and sessile in a very flat-topped cluster ; petals sharply toothed. Cultivated from Europe.

2 **Diánthus plumàrius** (Common Pink). A low and tufted plant, with small narrow whitish leaves ; flowers solitary at the ends of the branches, white or pink, or variegated ; petals cut into a fringe of slender lobes. Cultivated from Europe.

3. **Diánthus Caryophýllus** (Carnation. Clove Pink). Stems hard or almost woody below ; leaves long-linear and grass-like, whitish ; flowers solitary at the ends of branches, of various colors (white, pink, red, yellow, and variegated) ; petals toothed or entire. Cultivated from Europe.

2. SAPONÀRIA

Coarse herbs with terminal clusters of large flowers, and characters of *Dianthus*, but with no bracts or small leaves at the base of the calyx.

1. **Saponària officinàlis** (Bouncing Bet). A stout plant; leaves oval-lanceolate ; large rose-colored (commonly double) flowers in flattish clusters ; petals crowned with an appendage at the top of the stalk. Roadsides. From Europe.

3. SILÈNE (Catchfly)

Herbs with solitary or clustered flowers, a 5-toothed calyx, 5 petals with slender stalk-like base, 10 stamens, 3 styles, a 1–3-celled ovary, and a pod opening at apex by 3 or 6 teeth.

1. **Silène stellàta** (Starry Campion). Stems about 3 ft. high; leaves ovate-lanceolate, in whorls of 4; flowers white and in a large open terminal cluster; calyx bladdery-inflated, bell-shaped; petals cut into a fringe. Wooded banks of streams.

2. **Silène Pennsylvánica** or **Silène Caroliniàna** (Wild Pink). Plants 4-8 in. high, sticky-hairy, especially the calyx; basal leaves narrowly spatulate, tapering into hairy petioles; stem-leaves lanceolate; flowers clustered, short-stalked: calyx elongated, not inflated; petals wedge-form, slightly notched, pink. Sandy soil.

3. **Silène Virgínica** (Fire Pink). Slender, 1-2 ft. high, sticky-hairy; leaves spatulate, or the upper oblong-lanceolate; flowers few and loosely clustered; calyx cylindrical, not inflated; petals oblong, 2-cleft, deep crimson. Open woods.

4. LÝCHNIS (Cockle)

Herbs resembling *Silene*, but with 5 (rarely 4) styles, and pod opening by as many or twice as many teeth.

1. **Lýchnis Githàgo** or **Agrostémma Githàgo** (Corn Cockle). Covered with long soft hairs; leaves long-linear; flowers purple-red; calyx-lobes like the leaves, longer than the broad petals. In wheat-fields.

5. STELLÀRIA or ALSÌNE (Chickweed)

Herbs with solitary or clustered white flowers, a calyx of 4 or 5 separate sepals, 4 or 5 deeply 2-cleft petals which are not slender-stalked, 3-10 stamens, 3 styles, and an ovoid pod splitting into 6 pieces.

1. **Stellària mèdia** or **Alsìne mèdia** (Common Chickweed). Stems weak and spreading; leaves ovate or oblong, the lower on hairy petioles: petals shorter than the calyx; stamens 3-10. Damp ground. Introduced from Europe.

2. **Stellària pùbera** or **Alsine pùbera** (Great Chickweed). Stems weak and spreading; leaves ovate or oblong, all sessile; petals longer than the calyx; stamens 10. Woods.

XXIV. ANONÁCEÆ (Custard-apple Family)

Trees or shrubs with alternate entire leaves, solitary axillary flowers, 3 sepals, 6 petals (in 2 rows), numerous stamens in a globular mass, and few separate pistils forming large pulpy fruits.

1. ASÍMINA (Papaw)

Shrubs or small trees with dark dull-purple flowers solitary from the axils of last year's leaves, and 1-4 large oblong yellowish-pulpy fruits containing several horizontal flat seeds.

1. **Asímina tríloba.** Plants 10-20 ft. high, with young shoots and opening leaves rusty-brown; leaves obovate-lanceolate, pointed; flowers appearing with the leaves; petals veiny, round-ovate; fruit 3-4 in. long, sweet and edible. Rich soil.

XXV. RANUNCULACEÆ (Crowfoot Family)

Herbs with flower parts all distinct, 3–15 sepals, petals 3–15 or wanting, numerous stamens or rarely few, and many or few pistils becoming either pods, akenes, or berries. (See *Plant Structures*, p. 259.) When the petals are wanting the calyx is often colored like a corolla.

* Sepals 4, petal-like ; petals none or small ; akenes numerous and long-tailed by the styles ; leaves all opposite.

1. **Clematis.** Climbing by the leaf stalks, or erect herbs.

* * Sepals 3 20 ; stamens mostly numerous ; akenes numerous or several in a head or spike; leaves alternate or basal, the upper sometimes opposite or whorled.

+ Petals none ; sepals petal-like.

++ All but the lower leaves opposite or whorled.

2. **Anemone.** Involucre leaf-like, remote from the flower; leaves compound or dissected ; pistils very numerous.

3. **Hepatica.** Involucre close to the flower, of 3 sepal-like bracts ; leaves basal ; pistils several.

4. **Anemonella.** Basal leaves and involucre compound ; akenes 4–15, many ribbed.

++ ++ Leaves alternate, compound.

5. **Thalictrum.** Sepals usually 4, petal-like or greenish ; akenes few.

+ + Petals more or less showy ; sepals usually 5 ; akenes numerous.

6. **Ranunculus.** Petals 5, yellow (in ours) ; akenes in a head.

* * * Pods or berries few ; leaves alternate.

+ Flowers regular, not in racemes ; sepals petal-like.

7. **Isopyrum.** Sepals 5, white ; petals none ; leaves compound.

8. **Caltha.** Sepals 5–9, yellow ; petals none ; leaves simple.

9. **Aquilegia.** Petals large hollow spurs projecting between the sepals ; leaves compound.

+ + Flowers irregular, in racemes ; sepals petal-like.

10. **Delphinium.** Upper sepal spurred and inclosing the long spurs of 2 petals.

+ + + Flowers regular, very large, not in racemes; sepals not petal-like.

11. **Pæonia.** Pistils 2 or more, becoming leathery pods.

1. CLÉMATIS (Virgin Bower)

Climbing herbs or vines with opposite leaves, solitary or clustered flowers, 4 colored sepals, numerous stamens, and numerous pistils which ripen into a head of akenes with long plumose tails.

1. **Clématis Virginiàna** (Common Virgin Bower). Climbing over shrubs; leaves with 3 ovate, acute, cut or lobed leaflets; flowers white and rather small, in loose spray-like clusters, the staminate and pistillate on different plants. Stream banks, etc.

2. **Clématis Viórna** (Leather-flower). Stems climbing; leaflets 3–7, ovate or oblong, 2–3-lobed or entire, uppermost often simple; flowers large, solitary and nodding on long stalks; calyx at length bell-shaped, the purplish sepals very thick and leathery. Rich soil.

2. ANEMÒNE (Anémone)

Herbs with basal leaves, those of the stem 2 or 3 together and opposite or whorled remote from the flower, solitary flowers on 1 or few stalks, few or many petal-like sepals, no petals (or mere rudiments), numerous stamens, and numerous pistils ripening into a head or thick spike of akenes, which are pointed or tailed and flattened but not ribbed.

* Head of fruits with long feathery tails.

1. **Anemòne pàtens Nuttalliàna** or **Pulsatílla hirsutíssima** (Pasque-flower). Low, and densely covered with long silky hairs; leaves 3-divided, the lateral divisions 2-parted, the middle one stalked and 3-parted, the segments cleft into narrow lobes; lobes of stem-leaves all united at base into a shallow cup; a solitary peduncle bearing an erect large flower which is developed before the leaves; sepals 5–7, purplish or whitish. Prairies.

* * Fruits merely beaked.

2. **Anemòne cylíndrica.** Slender, 2 ft. high, silky-hairy; stem-leaves long-petioled, 3-divided, the divisions wedge-lanceolate, lateral 2-parted, middle 3-cleft, with lobes cut and toothed at apex; flowers 2–6, on very long erect and naked stalks; sepals 5, rather obtuse, greenish-white; head of fruit cylindrical, 1 in. long, the akenes tipped with the stout persistent style. Dry woods.

3. **Anemòne Virginiàna.** Like the last, but often taller, less pubescent or becoming almost smooth; stem-leaves fewer (3), 3-parted, the divisions ovate-lanceolate; flower-stalks elongated, the earliest naked, the others 2-leaved at the middle; sepals acute; head of fruit oval or oblong. Woods and meadows.

4. **Anemòne nemoròsa** or **Anemòne quinquefòlia** (Wind-flower). Low delicate and smooth plants, with simple stem and basal leaves from a slender rootstock; stem-leaves 3, long-petioled, with 3 wedge-shaped or oblong toothed or cut leaves; flower solitary, the stalk not longer than the stem-leaves; sepals 4–7, oval and white (sometimes blue, or tinged with purple outside); pistils only 15–20, oblong, with a hooked beak. Open woods.

3. HEPÁTICA (Liver-leaf. Hepatica)

Like *Anemone*, but the stem-leaves simple and in a whorl of 3 close to the flower so as to resemble a calyx; the basal leaves heart-shaped and 3-lobed, thickish and persistent through the winter, the new ones appearing later than the flowers, which are single and on hairy stalks.

1. **Hepática tríloba** or **Hepática Hepática.** Leaves with 3 ovate obtuse or rounded lobes; sepals 6–12, blue, purplish, or nearly white; akenes several in a small loose head. Woods. Blooming very early.

4. ANEMONÉLLA or SYNDÉSMON

Low smooth herbs with compound basal leaves and 2 or 3 similar stem-leaves at the base of an umbel of white flowers, 5–10 conspicuous sepals, no petals, numerous stamens, and 4–15 pistils becoming strongly 8–10-ribbed sessile akenes.

1. **Anemonélla thalictroìdes** or **Syndésmon thalictroìdes** (Rue-anemone). Stem and slender petiole of basal leaf rising from a cluster of thickened tuberous roots; leaves ternately compound; leaflets roundish, somewhat 3-lobed at end, heart-shaped at base; sepals white, rarely pinkish. Woods.

5. THALÍCTRUM (Meadow-rue)

Herbs with alternate ternately compound leaves, flowers in loose clusters, 4 or 5 petal-like or greenish sepals, no petals, numerous stamens, and 4–15 pistils ripening into grooved or ribbed akenes.

1. **Thalíctrum dìoìcum.** Smooth and pale, 1–2 ft. high; leaflets drooping, rounded and 3–7-lobed; flowers purplish and greenish, the pistillate and staminate ones on different plants; anthers drooping on fine hair like filaments. Rocky woods.

6. RANÚNCULUS (Crowfoot. Buttercup)

Herbs with alternate leaves, solitary or clustered yellow (sometimes white) flowers, 5 sepals, 5 flat petals, numerous stamens, and numerous pistils becoming a globose head of mostly flattened and pointed akenes. (See *Plant Structures*, p. 222, Fig. 202.)

* Pale-yellow petals shorter than the reflexed sepals.

1. **Ranúnculus abortìvus.** Smooth or sometimes hairy, branching, ¼–2 ft. high; first basal leaves round-heart-shaped, barely crenate, the succeeding ones often 3-lobed or 3-parted; stem-leaves 3–5-parted, the divisions oblong or narrow wedge form; akenes with a minute curved beak. Open woods and banks of streams.

2. **Ranúnculus recurvàtus.** Hirsute, 1–2 ft. high. basal and stem-leaves nearly alike, long petioled, deeply 3-cleft, large; the lobes broadly wedge-shaped; 2 or 3 cleft, cut and toothed toward the apex; akenes with a long recurved beak. Woods.

* Bright yellow petals twice the length of the spreading sepals.

3. **Ranúnculus fasciculàris.** Low, 5–9 in. high, pubescent with close pressed silky hairs; root a cluster of thickened fleshy fibers; basal leaves appearing pinnate; the long-stalked terminal division remote from the 2 or 4 sessile lateral ones, itself 3–5-divided; akenes tipped with a slender straight beak. Dry or moist woods.

7. ISOPŸRUM

Slender smooth herbs with ternately compound leaves, 2- or 3-lobed leaflets, axillary and terminal white flowers, 5 petal-like sepals, no petals, 10–40 stamens, and 3–6 pistils becoming ovate or oblong several-seeded pods.

1. **Isopŷrum biternàtum.** Root fibers thickened here and there into little tubers; pods usually 4, spreading in fruit. Moist woods.

8. CÁLTHA (Marsh-marigold)

Smooth herbs with round and heart-shaped or kidney-shaped large undivided alternate leaves, 5-9 broad bright yellow sepals, no petals, numerous stamens, and 5-10 pistils with scarcely any styles becoming spreading many-seeded pods.

1. **Cáltha palústris.** Stem hollow, furrowed ; leaves crenate or toothed or nearly entire. Swamps and wet meadows. (See *Plant Structures*, p. 260, Fig. 243.)

9. AQUILÈGIA (Columbine)

Herbs with ternately compound leaves, lobed leaflets, large showy flowers terminating the branches, 5 sepals colored like the petals, 5 petals with short spreading lip and produced backward into large hollow spurs much longer than the calyx, numerous stamens, and 5 pistils becoming erect pods.

1. **Aquilègia Canadénsis** (Wild Columbine). Flowers 2 in. long, scarlet, yellow inside, nodding ; spurs nearly straight. Rocks.

2. **Aquilègia vulgàris** (Garden Columbine). Stems 1-3 ft. high, many-flowered ; flowers varying from blue to purple, white, etc. ; spurs hooked. Cultivated from the Old World.

10. DELPHÍNIUM (Larkspur)

Herbs with palmately divided leaves, flowers in terminal racemes, 5 petal-like sepals (the upper one prolonged into a spur at the base), 4 petals (the upper pair continued backward into long spurs inclosed in the calyx spur), numerous stamens, and 3 pistils becoming many-seeded pods. (See *Plant Structures*, p. 260, Fig. 244.)

1. **Delphínium tricórne.** Stems simple, ½–3 ft. high; leaves deeply 5-parted, their divisions 3-5 cleft; raceme few-flowered, loose ; flowers bright blue, sometimes white; spur straightish, ascending. Woods.

11. PÆÒNIA (Peony)

Herbs with ternately compound leaves, large single flowers, green sepals, large and often numerous petals, numerous stamens, and 2 or more pistils becoming leathery pods. (See *Plant Structures*. p. 220, Fig. 200.)

1. **Pæònia officinàlis** (Common Peony). Smooth, with large, coarsely divided green leaves ; the very large flowers red, white, etc. ; pods downy. Cultivated from the Old World.

XXVI. BERBERIDACEÆ (Barberry Family)

Shrubs or herbs with alternate leaves, 4 or 6 sepals, 6 or 9 petals, and as many (or twice as many) stamens opposite them with anthers usually opening at top by 2 valves, and a single pistil becoming a berry or pod.

* Shrubs ; petals and stamens 6.

1. **Berberis.** Flowers yellow ; fruit a berry.

* * Herbs ; petals 6–9 ; stamens 8–18 ; flowers white.

2. **Jeffersonia.** Petals and stamens usually 8 ; pod opening by a lid.
3. **Podophyllum.** Petals 6 or 9 ; stamens 12 or 18 ; fruit a large berry.

1. BÉRBERIS (Barberry)

Shrubs with drooping racemes of yellow flowers, 6 roundish sepals, 6 obovate and concave petals, 6 sensitive stamens, and fruit a sour berry.

1. **Bérberis vulgàris** (Common Barberry). Leaves scattered on the new shoots, mostly reduced to triple or branched spines and with clusters of the obovate and bristly-toothed new leaves in their axils ; racemes many-flowered ; berries scarlet. Cultivated from Europe, and often escaped.

2. JEFFERSÒNIA (Twin-leaf)

Glabrous herb with fibrous roots, long-petioled basal leaves parted into 2 half-ovate leaflets, a naked stem bearing a single white flower, 4 ephemeral sepals, 8 oblong petals, 8 stamens, and a pointed ovary becoming a pear-shaped pod which opens by a terminal lid.

1. **Jeffersònia diphýlla.** Low; flower 1 in. broad, rarely in 3s or 5s. Woods.

3. PODOPHÝLLUM (May-apple. Mandrake)

Herbs with creeping rootstocks, stems with 2 leaves, a solitary white flower, 6 ephemeral sepals, 6 or 9 obovate petals, twice as many stamens, a large sessile stigma, and fruit a large fleshy berry.

1. **Podophýllum peltàtum.** Flowerless stems terminated by a large round 7-9-lobed centrally peltate leaf (like an umbrella); flowering stems with two leaves 5-9-parted into wedge-shaped lobed or toothed divisions, and with the nodding flower (about 2 in. broad) from the fork. Rich woods.

XXVII. LAURACEÆ (Laurel Family)

Aromatic trees or shrubs with alternate simple leaves, staminate and pistillate flowers on different plants, a 6-parted colored calyx, about 9 stamens with anthers opening by 2 or 4 uplifted valves, and a 1-celled ovary becoming a fleshy fruit with a stone (*drupe*).

1. **Sassafras.** Trees ; anthers with 4 valves ; fruit blue.
2. **Lindera.** Shrubs ; anthers with 2 valves ; fruit red.

1. SÁSSAFRAS

Trees with spicy aromatic bark, entire or lobed leaves, greenish-yellow flowers in clustered racemes and appearing with the leaves, 6 parted spreading calyx, 9 stamens (6 short rudiments in pistillate flower) with 4-celled and 4-valved anthers, and an ovoid blue fruit on a rather fleshy reddish stalk.

1. **Sássafras officinàlis** or **Sássafras Sássafras.** Trees 15-125 ft. high; leaves ovate, entire or some of them 3-lobed. Rich woods.

2. LÍNDERA or BENZÒIN (Wild Allspice)

Spicy shrubs with entire leaves appearing after the lateral umbel-like clusters of yellow flowers, 6-parted open calyx, and 9 stamens (15-18 rudiments in pistillate flower) in 3 rows with 2-celled and 2-valved anthers, and a globular red fruit.

1. **Líndera Benzòin** or **Benzòin Benzòin** (Spice-bush). Nearly smooth, 6-15 ft. high; leaves oblong-obovate, pale underneath. Damp woods.

XXVIII. PAPAVERACEÆ (Poppy Family)

Herbs with alternate leaves, 2 ephemeral or scale-like sepals, 4–12 petals, 6 to many stamens, and a 1- or many-celled pod.

* Stamens numerous, distinct; sepals falling when the flower opens; petals wide-spreading, regular.

+ Pod 1-celled.

++ Flower bud erect.

1. **Sanguinaria.** Petals 8–12; stigma 2-lobed on a short style; juice orange-red.

2. **Argemone.** Petals 4 6; stigma 3 6-lobed, almost sessile; pod prickly; juice yellow.

3. **Eschscholtzia.** Sepals united into a pointed cap which falls off entire; petals 4; stigmas 4–6, spreading; pod long and slender, grooved; juice colorless.

++ ++ Flower bud nodding.

4. **Stylophorum.** Pod bristly; stigma 3–4-lobed, raised on a style; flowers yellow; juice yellow.

+ + Pod becoming many-celled.

5. **Papaver.** Pod globular or oblong; stigmas united into a many-rayed disk-like body; juice milky.

* * Stamens 6 in 2 clusters; sepals scale-like; corolla flattened, closed, spurred, or saccate.

6. **Dicentra.** Corolla cordate or 2-spurred at base.

7. **Corydalis.** Corolla with but one petal spurred at base.

1. SANGUINÀRIA (Bloodroot)

Low herb with thick rootstocks full of red-orange juice, a single basal rounded and palmate-lobed leaf, a naked stem bearing a single white flower, 8–12 spatulate-oblong petals, about 24 stamens, a short style, and a 1-celled oblong swollen pod.

1. **Sanguinària Canadénsis.** Open rich woods. (See *Pl. R.*, p. 195, Fig. 161*a*; also *Pl. St.*, p. 190, Fig. 168.)

2. ARGEMÒNE (Prickly Poppy)

Bristly herbs with sessile lobed and prickly-toothed leaves often blotched with white, large showy flowers, 2 or 3 often prickly sepals, 4–6 petals, numerous stamens, a sessile radiate stigma, and a 1-celled oblong prickly pod.

1. **Argemòne Mexicàna** (Mexican Poppy). Plant 1–2 ft. high; stems, leaves, sepals, and pods prickly; petals dull yellow to white, sometimes very large. Common in cultivation from tropical America.

2. **Argemòne platýceras.** Setose-hispid all over; petals white; pod armed with stout spines. Plains.

3. ESCHSCHÒLTZIA

Delicate herbs with pale dissected leaves, long-stalked large flowers, sepals united into a pointed cap which falls off entire, 4 petals, numerous stamens, and a long slender 1-celled pod.

1. **Eschschòltzia Califórnica** (Californian Poppy). A top-shaped dilatation at the base of the flower; flowers various shades of yellow, or white. Common in cultivation.

4. STYLÓPHORUM (Celandine Poppy)

Low herb with stems naked below and bearing above 2 (sometimes 1 or 3) pinnately parted or divided leaves, a terminal umbel-like cluster of one or few large bright yellow flowers, 2 hairy sepals, 4 petals, numerous stamens, a distinct style, and a 1-celled bristly oval pod.

1. **Stylóphorum diphýllum.** Leaves pale beneath, deeply pinnatifid into 5 or 7 oblong lobed divisions; basal leaves often with a pair of smaller and distinct leaflets. Damp woods.

5. PAPÀVER (Poppy)

Herbs with leafy stems, nodding flower-buds, showy flowers, mostly 4 petals, numerous stamens, a sessile many-rayed crown like stigma, and many-celled short and swollen pod which opens by pores under the edge of the stigma.

1. **Papàver somníferum** (Common Poppy). Smooth and pale; leaves clasping, wavy, incised, and toothed; flowers mostly white or purple; pod globose. Cultivated from Europe.

6. DICÉNTRA or BICUCÚLLA

Delicate smooth herbs with ternately compound and dissected basal leaves, nodding flowers in racemes on naked stems, 2 small and scale-like sepals, 4 petals slightly cohering in two pairs (outer with spreading tips and spurred or saccate base, inner narrow and with crested tips united over the stigma), 6 stamens in two clusters, and fruit a pod.

1. **Dicéntra Cucullària** or **Bicucúlla Cucullària** (Dutchman's Breeches). Stem and basal leaves from a granulate bulb; lobes of leaves linear; corolla white tipped with cream, with 2 divergent spurs. Rich woods.

2. **Dicéntra Canadénsis** or **Bicucúlla Canadénsis** (Squirrel Corn). Plants from scattered grain-like yellow tubers resembling grains of corn; corolla

greenish-white tinged with rose, heart-shaped at base (the spurs being very short and rounded). Rich woods.

3. **Dicéntra spectábilis** (Bleeding Heart). Taller and coarser leafy-stemmed plants with large much more coarsely compound leaves, and long drooping raceme of red (or white) heart-shaped flowers 1 in. long. Cultivated from China.

7. CORÝDALIS or CAPNOÌDES

Pale leafy-stemmed herbs, with compound dissected leaves, and racemes of small, usually yellow flowers, as in *Dicentra*, but corolla 1-spurred at base.

1. **Corýdalis aùrea** or **Capnoìdes aùreum** (Golden Corydalis). Flowers golden-yellow, ½ in. long, the slightly decurved spur about half as long; pod spreading or pendent, becoming warty. Rocky woods.

XXIX. CRUCIFERÆ (Mustard Family)

Herbs, usually pungent, with alternate leaves, terminal clusters of flowers, 4 sepals, 4 petals, 6 stamens (4 long and 2 short), and a 2-celled pod. (See *Plant Structures*, p. 261, Fig. 246.)

* Fruit a true pod, splitting lengthwise into two parts, which fall away and leave the thin partition.

+ Pod flattened parallel to the partition.

1. **Dentaria.** Stems naked below, from a fleshy rootstock; pod oblong or linear; seeds wingless.

2. **Cardamine.** Stems leafy, mostly from fibrous roots; pod oblong or linear; seeds wingless.

3. **Alyssum.** Stems leafy; pods round; seeds winged.

+ + Pod globular, cylindric, or 4-angled, not flattened.

4. **Nasturtium.** Pod globular or cylindric; leaves more or less pinnatifid; aquatic or marsh plants.

5. **Erysimum.** Pod 4-angled; leaves simple; flowers yellow.

+ + Pod short, much flattened contrary to the narrow partition.

6. **Capsella.** Pod triangular and notched at the top, several or many seeded.

7. **Lepidium.** Pod oval, usually with 2 seeds; corolla regular, small.

8. **Iberis.** Pod scale-shaped, roundish, or ovate, usually 2-seeded; corolla irregular.

* * Fruit somewhat fleshy, not splitting.

9. **Raphanus.** Seeds separated by partitions.

1. DENTÀRIA (Toothwort)

Herbs with long horizontal fleshy pungent rootstocks, simple stems naked below and bearing 2 or 3 petioled compound leaves about or above the middle and terminated by a single cluster of large white or purple flowers, and lanceolate flat pods.

1. **Dentària diphýlla.** Rootstock long and continuous, often branched; stem leaves 2, similar to the basal ones; leaflets rhombic-ovate or oblong ovate, coarsely crenate, the teeth abruptly acute; flowers white. Rich woods.

2. **Dentària laciniàta.** Rootstock tuberous, deep-seated; basal leaves often none; stem leaves 3-parted, the lateral segments often 2-lobed, all broadly oblong to linear, more or less gash-toothed; flowers white or rose-color. Rich woods.

2. CARDÁMINE (Bitter Cress)

Mostly smooth and leafy-stemmed herbs with simple or compound leaves, a terminal cluster of white or purple flowers, and a linear flattened pod.

1. **Cardámine rhombòidea** or **Cardámine bulbòsa** (Spring Cress). Stems upright from a tuberous rootstock, simple; basal leaves round and often heart-shaped; lower stem leaves ovate or oblong, the upper almost lanceolate, all often sparingly toothed; flowers large, white; pods linear lanceolate, pointed with the slender style. Wet meadows and springs. The var. **purpùrea** is lower, usually somewhat hairy, and has rose-purple flowers.

2. **Cardámine hirsùta.** Smooth or with scattered hairs; stems ¼–2 ft. high, arising from the spreading cluster of basal pinnate leaves; leaflets rounded, those of the upper leaves oblong or linear, all toothed, angled or entire; flowers small, white; pods linear, very narrow, erect or ascending. Wet places.

3. ALÝSSUM or KÒNIGA

Low herbs with linear leaves, terminal clusters of white or yellow flowers, and small orbicular pods.

1. **Alýssum marítimum** or **Kòniga marítima** (Sweet Alyssum). Leaves green or slightly hoary; flowers small, white, honey-scented; pod 2-seeded. Cultivated from Europe.

4. NASTÚRTIUM or RORÌPA (Water Cress)

Water or marsh plants with pinnate or pinnatifid leaves, yellow or white flowers, and a short linear pod which is not flattened.

1. **Nastúrtium officinàle** or **Rorìpa Nastúrtium** (True Water Cress). Stems spreading and rooting; leaves with 3–11 roundish or oblong nearly entire leaflets; petals white, twice the length of the calyx; pods linear, ascending on slender widely spreading stalks. Cultivated from Europe, but escaped into brooks and ditches.

5. ERÝSIMUM

Herbs with leafy stems, narrow leaves, a terminal cluster of large crowded bright orange-yellow flowers, and linear 4-sided pods.

1. **Erýsimum ásperum** (Western Wall Flower). Rather stout, 1–2 ft. high, minutely hoary; leaves lanceolate to linear, entire or toothed; pods nearly erect or widely spreading, 3–4 in. long. Moist or dry ground.

6. CAPSÉLLA or BÚRSA (Shepherd's Purse)

Low plants with clustered pinnatifid basal leaves, arrow-shaped sessile stem leaves, an elongating raceme of small white flowers, and an obcordate-triangular pod, flattened contrary to the narrow partition.

1. **Capsélla Búrsa-pastòris** or **Búrsa Búrsa-pastòris.** Excessively common in waste places. A weed from Europe.

7. LEPÍDIUM (Peppergrass)

Small plants with simple leaves, small white or greenish flowers, and a roundish pod much flattened contrary to the narrow partition.

1. **Lepídium Virgínicum.** Leaves with tapering base, the upper linear or lanceolate and entire, the lower incised or pinnatifid; the orbicular or oval pods with a small notch at top; stamens only 2. Common along roadsides.

8. IBÈRIS (Candytuft)

Low plants with narrow leaves, flowers in flat clusters (outer petals much larger than the inner), and scale-shaped roundish wing-margined and notched pods.

1. **Ibèris sempérvirens.** Woody at base, tufted; leaves bright green, lanceolate or linear-spatulate, thickish and entire; flowers pure white. Cultivated from Europe.

2. **Ibèris umbellàta.** Herbaceous; lower leaves lanceolate, the upper linear and entire; flowers purple-lilac (or pale). Cultivated from Europe.

9. RÁPHANUS (Radish)

Annual or biennial from a thick root, with a cluster of lyrate root leaves, purple or white flowers, and thick pointed pods with the seeds separated by partitions.

1. **Ráphanus satìvus.** Cultivated from the Old World for its fleshy root.

XXX. CAPPARIDACEÆ (Caper Family)

Herbs with alternate palmately compound leaves, 4 petals, 6 or more stamens, and a 1-celled pod.

1. **Cleome.** Stamens 6; pod long-stalked.
2. **Polanisia.** Stamens 8 or more; pod not stalked or scarcely so.

1. CLEÒME

Smooth herbs with leaves of 3 leaflets, showy bracted racemes of rose-colored or white flowers, a 4-cleft calyx, entire petals tapering to a slender stalk, 6 stamens, and a linear to oblong long-stalked pod.

1. **Cleòme integrifòlia** or **Cleòme serrulàta.** Stems 2–3 ft. high; leaflets narrowly lanceolate to oblong; pod 1–2 in. long, its stalk as long as the flower stalk. Open ground.

2. POLANÍSIA

Clammy hairy herbs with leaves of 3 leaflets, small flowers in leafy racemes, stalked and notched petals, 8–32 unequal stamens, and a linear or oblong veiny swollen pod.

1. **Polanísia gravèolens.** Leaflets oblong; flowers small, yellowish-white with purplish calyx and filaments; stamens about 11 and hardly longer than the petals; pod slightly stalked. Gravelly soil.

XXXI. CRASSULACEÆ (Orpine Family)

Usually fleshy herbs with sessile leaves, flower parts all of the same number or the stamens double, and fruit a pod.

1. **Penthorum.** Not fleshy; sepals 5; petals none; stamens 10; carpels united, forming a 5-beaked pod.

2. **Sedum.** Leaves thick and fleshy; sepals, petals, and separate pistils 4 or 5; stamens 8–10.

1. PÉNTHORUM (Ditch Stonecrop)

Erect herbs with scattered entire leaves, yellowish-green flowers sessile along the upper side of the spreading naked flowering branches, 5 sepals, petals rare if any, 10 stamens, and 5 pistils united below and forming a 5-angled and 5-horned pod.

1. **Pénthorum sedoides.** Leaves lanceolate, acute at both ends. Open wet ground.

2. SÈDUM (Stonecrop)

Smooth thick-leaved herbs with flowers sessile along one side of spreading flowering branches, the first or central flower mostly with 5 sepals and petals and 10 stamens, the others often with 4 sepals and petals and 8 stamens, and 4 or 5 distinct pistils ripening into many-seeded pods.

1. **Sèdum ternàtum.** Stems spreading, 3–6 in. high; leaves flat, the lower in whorls of 3, wedge-obovate, the upper scattered and oblong; flower branches 3; petals white. Rocky woods.

XXXII. SAXIFRAGACEÆ (Saxifrage Family)

Herbs or shrubs with alternate and opposite leaves usually without stipules, mostly 10 stamens, and a 1–5-celled superior or inferior ovary becoming a pod.

* Herbs; ovary superior or nearly so.

1. **Saxifraga.** Petals entire; stamens 10; ovary 2-celled.
2. **Mitella.** Petals pinnatifid; stamens 10; ovary 1-celled.
3. **Heuchera.** Petals entire; stamens 5; ovary 1-celled.

* * Shrubs; ovary inferior; leaves opposite.

4. **Deutzia.** Stamens 10; filaments flat.
5. **Philadelphus.** Stamens 20–40.

1. SAXÍFRAGA (Saxifrage)

Herbs with clustered basal leaves, stems naked or with alternate leaves, a terminal cluster of flowers, a 5-cleft calyx, 5 entire petals, 10 stamens, 2 styles, and a 2 celled ovary becoming a 2-beaked pod or 2 almost separate and divergent pods. (See *Pl. R.* and *Pl. St.*, p. 58, Fig. 48.)

1. **Saxífraga Virginiénsis** (Early Saxifrage). Low, 4–9 in. high; leaves all basal, obovate, or oval spatulate, crenate-toothed, thickish; flowers in a loose cluster on the naked stem; calyx-lobes erect, not half the length of the oblong obtuse white petals. Dry rocks and hillsides.

2. **Saxífraga Pennsylvánica** (Swamp Saxifrage). Large, 1–2 ft. high; leaves all basal, oblanceolate, obscurely toothed; flowers in a loose cluster on the naked stem; calyx-lobes recurved, about the length of the linear-lanceolate greenish small petals. Bogs.

2. MITÉLLA (Mitrewort. Bishop-cap)

Low and slender herbs with round heart-shaped basal leaves, those on the flowering stems opposite, a terminal slender raceme of small flowers, a short 5-cleft calyx, 5 delicate and pinnatifid petals, 10 included stamens, 2 very short styles, and a 1-celled ovary becoming a 2-beaked pod.

1. **Mitélla diphýlla.** Hairy; leaves heart-shaped, acute, somewhat 3-5-lobed and toothed; those on the stem 2, opposite, and nearly sessile. Rich woods.

3. HEÙCHERA (Alum-root)

Herbs with round heart-shaped basal leaves, those of the stem (if any) alternate, greenish or purplish flowers in long clusters, a 5-cleft bell shaped calyx, 5 small spatulate and entire petals, 5 stamens, 2 slender styles, and a 1-celled ovary becoming a pod.

1. **Heùchera Americàna.** Stems 2–3 ft. high, glandular, and more or less hirsute; leaves roundish with short rounded lobes and crenate teeth; flowers small, the petals not longer than the calyx lobes; stamens and styles protruding. Rocky woods.

4. DEÙTZIA

Shrubs with opposite simple leaves; numerous clusters of white or pinkish flowers, a 5-lobed calyx, 5 petals, 10 stamens with flat filaments, 3-5 slender styles, and an inferior 3–5-celled ovary becoming a pod.

1. **Deùtzia grácilis.** About 2 ft. high; leaves ovate-lanceolate, sharply serrate, bright green and smooth; flowers snow-white; filaments forked at the top. Cultivated from Japan.

2. **Deùtzia scàbra.** Tall shrub, rough with fine pubescence; leaves pale, ovate, or oblong-ovate, minutely crenate-serrate; flowers dull white or pinkish; filaments broadest above and with a blunt lobe on each side just below the anther. Cultivated from China and Japan.

5. PHILADÉLPHUS (Syringa)

Shrubs with opposite often toothed leaves, clustered showy white flowers, calyx with top-shaped tube and 4- or 5-parted spreading border, 4 or 5 large

rounded petals, 20–40 stamens, 3–5 more or less united styles, and an inferior 3–5-celled ovary becoming a pod.

1. **Philadélphus coronàrius.** Leaves smoothish and oblong-ovate; fragrant cream-white flowers in crowded clusters. Cultivated from southern Europe.

XXXIII. GROSSULARIACEÆ (Gooseberry Family)

Like *Saxifragaceæ*, but shrubs with alternate palmately veined and lobed leaves, 5 stamens, an inferior 1-celled ovary, and fruit a berry.

1. RÌBES (Currant. Gooseberry)

Low sometimes prickly shrubs with lateral clusters of small flowers, a 5-lobed often colored calyx, 5 small petals in the throat of the calyx, and 2 separate or more or less united styles.

* Flowers 1–3 in a cluster; gooseberries.

1. **Ribes Cynósbati** (Wild Gooseberry). Stems mostly prickly; leaves round heart-shaped, 3-5-lobed; flowers 1–3 in a cluster; stamens and undivided style not longer than the broadly bell-shaped calyx, whose lobes are shorter than the tube; berries large, becoming dull purple, armed with long prickles (rarely smooth). Rocky woods.

2. **Ribes Grossulària** or **Ribes Uva-crispa** (European Gooseberry). Like the last, but a stocky bush with thickish leaves, calyx-lobes longer than the tube, pubescent calyx and ovary, and a large usually finely pubescent berry. Cultivated from Europe.

3. **Ribes oxyacanthoìdes** (American Gooseberry). Like the last, but with very short prickles or none; leaves thinner; stamens and 2-cleft style scarcely equaling the broadly oblong calyx-lobes; ovary and berry smooth, the latter becoming green or reddish.

4. **Ribes rotundifòlium.** Like the last, but filaments slender and more or less exceeding the narrowly oblong-spatulate calyx-lobes; berry smooth.

* * Flowers in racemes; currants.

5. **Ribes rùbrum** (Garden Currant). No thorns or prickles. Stems straggling or reclining; leaves heart-shaped and with 3–5 roundish lobes; flowers greenish or whitish, in drooping racemes; calyx flat and open; berries red or white. Cultivated from Europe.

6. **Ribes aùreum** (Golden, Buffalo, or Missouri Currant). Smooth bush with rounded 3-lobed and cut-toothed leaves; short racemes of spicy-scented bright-yellow flowers; tube of yellow calyx much longer than the spreading lobes; berries blackish. Commonly cultivated from the West.

XXXIV. ROSACEÆ (Rose Family)

Herbs or shrubs with alternate stipulate leaves, usually 5 more or less united sepals, as many petals, numerous stamens (with the petals) on the calyx-tube, numerous superior ovaries

(sometimes inclosed in the calyx-tube), and fruits various. (See *Pl. S.*, p. 262; also *Pl. St.*, p. 79, Fig. 72.)

* Pistils not inclosed in calyx-tube at maturity.

+ Pistils fleshy in fruit.

1. **Rubus.** Herbs or with soft woody stems; small fleshy fruits crowded on a spongy receptacle.

+ + Pistils forming akenes; herbs.

2. **Geum.** Styles elongated in fruit, forming persistent tails.

3. **Potentilla.** Styles not elongated; akenes heaped on a dry receptacle.

4. **Fragaria.** Styles not elongated; akenes on a much enlarged pulpy receptacle.

* * Pistils inclosed in the urn-shaped fleshy calyx-tube.

5. **Rosa.** Prickly shrubs with pinnately compound leaves.

1. RÙBUS (Bramble)

Herbs or somewhat shrubby plants with usually compound leaves and mostly white flowers, a 5-parted calyx, and usually many small fleshy stone fruits collected on a dry or fleshy receptacle.

* Fruit falling off from the dry receptacle; raspberries.

1. **Rùbus strigòsus** (Wild Red Raspberry). Stems woody, upright, with stiff straight bristles; leaflets 3–5, ovate, pointed, serrate; petals as long as the sepals; fruit light red. Thickets and hills. (See *Plant Structures*, p. 262, Fig. 248.)

2. **Rùbus occidentàlis** (Black Raspberry). Whitish all over; stems recurved, armed with hooked prickles, not bristly; leaflets 3 (rarely 5), ovate, pointed, coarsely serrate; petals shorter than the sepals; fruit purple-black. Thickets.

* * Fruit not separating from the juicy receptacle; blackberries.

3. **Rùbus villòsus** (Common Blackberry). Shrubby, 1–6 ft. high, upright or reclining, armed with stout curved prickles; leaflets 3 (or sometimes 5), ovate, pointed, serrate, the terminal ones conspicuously stalked; spreading petals much longer than the narrow sepals; fruit oblong, blackish. Thickets.

2. GÈUM (Avens)

Herbs with pinnately compound or lyrate leaves, a bell-shaped or flattish 5-cleft calyx, and numerous akenes crowded on a prominent receptacle and with the long persistent styles forming hairy or naked tails.

1. **Gèum álbum** or **Gèum Canadénse.** Smooth or soft hairy; stem slender, 2 ft. high; basal leaves of 3–5 leaflets, or simple and rounded with a few minute leaflets below; stem leaves 3-divided or lobed or only toothed; petals white or pale yellowish, small; head of fruit sessile in the calyx. Open woods.

2. **Gèum vérnum.** Somewhat hairy; stems slender, few-leaved; basal leaves roundish heart-shaped, 3–5-lobed or some of them pinnate; petals yellow, about as long as the calyx; head of fruit conspicuously stalked in the calyx. Thickets.

3. POTENTÍLLA (Cinquefoil. Five-finger)

Herbs or rarely shrubs with compound leaves, solitary or clustered flowers, flat 5-cleft calyx with as many bractlets at the intervals, and numerous akenes in a head with the styles not persisting as a tail. (See *Pl. R.* and *Pl. St.*, p. 79, Fig. 72; also *Plant Structures*, p. 225, Fig. 205.)

* Herbs.

+ Flowers in terminal clusters.

1. **Potentílla argùta.** Stems erect, usually stout, 1–4 ft. high, brownish-hairy, clammy above; leaves pinnate with 7–11 oval or ovate serrate leaflets, downy beneath; white or yellow flowers rather large, in an upright rather close cluster; stamens mostly 30; akenes glabrous. Rocky ground.

2. **Potentílla Norvégica** or **Potentílla Monspeliénsis.** Stout, erect, hirsute, ½–2 ft. high; leaves ternate, with obovate or lanceolate serrate leaflets; small yellow flowers in a rather close leafy cluster; stamens 15 (rarely 20). Open ground.

3. **Potentílla argéntea** (Silvery Cinquefoil). Stems ascending, branching above, many-flowered, white woolly; leaves palmate, of 5 leaflets which are wedge-oblong, almost pinnatifid, green above, white with silvery wool beneath; flowers yellow, rather large; stamens 20. Dry fields.

+ + Flowers solitary and axillary.

4. **Potentílla Canadénsis** (Common Cinquefoil). Villous-pubescent; stems slender and more or less prostrate, sometimes erect; leaves palmate, of 3 leaflets, but apparently 5 by the parting of the lateral leaflets; leaflets wedge-oblong or obovate, serrate; yellow flowers solitary in the axils. Dry soil.

* * Shrubs.

5. **Potentílla fruticòsa** (Shrubby Cinquefoil). Stem erect, shrubby, 1–4 ft. high, much branched; leaves pinnate; leaflets 5 7, crowded, lanceolate, entire, silky; flowers numerous, with yellow rounded petals; akenes densely hairy. Wet grounds.

4. FRAGÀRIA (Strawberry)

Low herbs with runners, a cluster of palmate basal leaves, the 3 leaflets obovate and serrate, the naked stem terminated by a cluster of white flowers which are nearly as in *Potentilla* but the receptacle in fruit much enlarged and conical, becoming pulpy and scarlet and bearing the minute dry akenes scattered over its surface. (See *Pl. R.* and *Pl. St.*, p. 57, Fig. 47.)

1. **Fragària Virginiàna.** Calyx erect after flowering; akenes imbedded in the deeply pitted fruiting receptacle. Rich woods and fields.

5. RÒSA (Rose)

Shrubby and usually spiny or prickly plants with odd-pinnate leaves and showy flowers, an urn-shaped calyx-tube contracted at the mouth and becoming fleshy in fruit, 5 broad petals inserted with the numerous stamens into the rim of the calyx-tube which bears within and below the numerous hairy pistils which become bony akenes.

1 **Ròsa Carolìna.** Stems usually tall, 1-7 ft. high, with stout straight or more or less curved spines; leaflets 5 9, dull green, finely many toothed. Borders of swamps and streams.

2. **Rosa humilis.** Stems usually low, 1–3 ft. high, with straight slender spines; leaflets mostly 7, smooth and often shining above, coarsely toothed. Mostly in dry or rocky soil.

XXXV. POMACEÆ (Apple Family)

Trees or shrubs with the characters of *Rosaceæ*, but with 2–5 styles distinct or united at base, an inferior 5-celled ovary, and a fleshy fruit formed by the calyx-tube and ovary (*pome*).

1. **Pyrus.** Fruit 2–5-celled, with 2 seeds in each cell.
2. **Amelanchier.** Fruit 10-celled, a single seed in each cell.

1. PYRUS (Pear. Apple)

Trees or shrubs with showy flowers in flat clusters, and a 2–5-celled fruit with 2 seeds in each cell.

* Fruit with base tapering down to the stalk; pears.

1. **Pyrus communis** (Common Pear). A smooth tree with branches inclined to be thorny; leaves ovate with small obtuse teeth; flowers pure white in a simple cluster. Cultivated from Europe. (See *Plant Structures*, p. 263, Fig. 249.)

* * Fruit sunken at both ends, especially at base; apples.

2. **Pyrus Malus** or **Malus Malus** (Common Apple). A tree with buds and lower surface of leaves (when young) and calyx woolly; leaves ovate or oblong, evenly serrate; flowers white and tinged with pink, in showy simple clusters.

3. **Pyrus coronaria** or **Malus coronaria** (American Crab Apple). Tree 20 ft. high, somewhat thorny, with large rose-colored very fragrant flowers; leaves ovate, cut serrate or lobed; styles woolly and united at base; fruit globular. Open woods and thickets.

* * * Fruit more or less pear-shaped; flowers solitary or in small sessile clusters; quinces.

4. **Pyrus Cydonia** or **Cydonia vulgaris** (Common Quince). A small bushy tree; leaves oval, entire, woolly beneath; flowers very large, white or tinged with red, terminating short leafy shoots; fruit woolly, more or less pear-shaped. Cultivated from Europe.

5. **Pyrus Japonica** or **Cydonia Japonica** (Japan Quince). Thorny smooth and widely branched shrub; leaves oval or wedge oblong; flowers large and showy, scarlet red or sometimes almost white, on side spurs and appearing in great abundance earlier than the leaves; fruit green-speckled, very hard. Cultivated from Japan.

2. AMELÁNCHIER (June-berry)

Small trees or shrubs with racemes of white flowers, calyx-lobes downy within, elongated petals, 5 styles united below, and a 5-celled berry-like fruit.

1. **Amelánchier Canadénsis** (Service-berry. Shad-bush). A tree 10–30 ft. high; leaves ovate and pointed, usually somewhat heart-shaped at base, sharply serrate; petals oblong; fruit globular, crimson or purplish. Open woods.

—The var. **oblongifòlia** is a smaller tree or shrub 6–10 ft. high, with more elliptical and finely serrate leaves, flowers in denser and shorter racemes, and petals somewhat spatulate and shorter. Moist ground.

XXXVI. DRUPACEÆ (Plum Family)

Trees or shrubs with the characters of *Rosaceæ*, but with simple leaves, a single style, and a superior 1-celled ovary becoming a fleshy fruit with a stone (*drupe*).

1. PRÙNUS (Plum. Peach. Cherry)

Small trees or shrubs with clusters of flowers, a bell-shaped to tubular 5-cleft calyx, 5 spreading petals, and 15–20 stamens.

* Flowers in clusters of 2 or 3 ; fruit pubescent ; peaches, almonds, etc.

1. **Prùnus Pérsica** (Peach). Small trees with lanceolate serrate leaves ; flowers pink ; fruit thick-fleshed and edible. Cultivated from China.

* * Flowers in umbel-like clusters ; fruit covered with a bloom ; plums.

2. **Prùnus doméstica** (Common Plum). Small trees with large ovate or obovate coarsely serrate leaves, usually pubescent beneath ; flowers white ; fruit variable but mostly globular or oblong. Cultivated probably from Asia.

3. **Prùnus Americàna** (Common Wild Plum). A thorny tree 8–20 ft. high ; leaves ovate, conspicuously pointed, coarsely serrate, smooth when mature ; flowers usually white ; fruit roundish oval, yellow, orange, or red. Woods and river banks.

* * * Flowers in small clusters along the branches or in racemes ; fruit without a bloom ; cherries.

4. **Prùnus seròtina** (Wild Black Cherry). A large tree ; leaves 3, oblong or lanceolate oblong, taper-pointed, serrate, shining above ; flowers small, white, in long racemes ; fruit small, globular, purplish-black. Woods.

5. **Prùnus Ceràsus** (Common Cherry). A low tree with spreading grayish branches ; flowers white, in small clusters from lateral buds, mostly earlier than the leaves ; leaves ovate or obovate ; fruit red of various shades. Cultivated from Europe.

XXXVII. CÆSALPINACEÆ (Senna Family)

Resembling *Papilionaceæ*, but the standard smaller than the wings and inclosed by them in bud, and stamens distinct.

1. CÉRCIS (Redbud. Judas-tree)

Trees with rounded heart-shaped simple leaves, clusters of red-purple flowers preceding the leaves, a 5-toothed calyx, 10 distinct stamens, and an oblong flat pod.

1. **Cércis Canadénsis.** Leaves pointed ; pods nearly sessile above the calyx. Rich woods. (See *Pl. R.* and *Pl. St.*, p. 10, Figs. 3*a*, 3*b*.)

XXXVIII. PAPILIONACEÆ (Pulse Family)

Herbs, shrubs, or trees with alternate and usually compound leaves, irregular flowers, 5 sepals more or less united, 5 very dissimilar petals (upper petal or *standard* larger than the others and inclosing them in the bud, turned back or spreading; the 2 lateral petals or *wings* oblique; the 2 lower petals coherent by their edges and forming the *keel* which usually incloses the stamens and pistil), usually 10 variously united stamens (mostly 9 united into a tube and the upper one separate), and a 1-celled ovary becoming a more or less elongated pod. (See *Plant Structures*, p. 264, Fig. 250.)

* Anthers of 2 forms; the stamens all united.

1. **Lupinus.** Leaves palmately 7–11-foliolate; calyx deeply 2-lipped; leaflets entire.

* * Anthers uniform; 1 stamen free.

+ Leaves palmately compound with 3 leaflets; pods small.

2. **Trifolium.** Flowers in a head; pods membranaceous.
3. **Melilotus.** Flowers in racemes; pods with thick walls, wrinkled.
4. **Medicago.** Flowers in racemes or spikes; pods curved or coiled.

+ + Leaves unequally pinnately compound, without tendrils; flowers in racemes.

5. **Tephrosia.** Hoary herbs; pods linear, flat.
6. **Robinia.** Trees; pods linear, flat.
7. **Wistaria.** Woody twiners; pods elongated and thickish.

+ + + Herbs with abruptly pinnately compound leaves terminated by a tendril.

8. **Pisum.** Lobes of the calyx leafy; style flattened laterally, bearded down the inner edge.
9. **Lathyrus.** Lobes of the calyx not leafy; style flattened above on the back and front, bearded down one face.

+ + + + Twining herbs; leaves pinnately compound, with 3 leaflets and no tendrils; pods elongated.

10. **Phaseolus.** Flowers in racemes; keel spirally coiled.

1. LUPÌNUS (Lupine)

Herbs with palmately 5–15-foliolate leaves, showy flowers in terminal racemes, a deeply 2-lipped calyx, a scythe-shaped pointed keel, and an oblong flattened pod.

1. **Lupìnus perénnis.** Somewhat hairy; stem erect, 1–2 ft. high; leaflets 7–11, oblanceolate; flowers purplish-blue (rarely pale), in a long showy raceme; pod broad, very hairy. Sandy soil.

2. TRIFÒLIUM (Clover)

Tufted or spreading herbs with palmately 3-foliolate leaves, usually toothed leaflets, small flowers in heads or spikes, a 5-cleft calyx with bristle-like teeth, a short and obtuse keel, and a small membranous pod.

1. **Trifòlium praténse** (Red Clover). Stems ascending, somewhat hairy; leaflets oval or obovate, often notched at tip and with a pale spot above; rose-purple flowers sessile in dense ovate heads, the corolla elongated-tubular. Meadows, and largely cultivated from Europe.

2. **Trifòlium reflèxum** (Buffalo Clover). Stems ascending, downy; leaflets obovate-oblong, finely toothed; flowers on short stalks in umbel-like round heads, reflexed when old; tubular part of corolla short, standard rose-red, wings and keel whitish. Meadows.

3. **Trifòlium rèpens** (White Clover). Stems slender, smooth, spreading and creeping; leaflets inversely heart-shaped or only notched, obscurely toothed; flowers on stalks in small and loose umbel-like heads, reflexed when old; calyx much shorter than the white corolla. Fields, everywhere.

3. MELILÒTUS (Sweet Clover)

Herbs (fragrant in drying) with pinnately 3-foliolate leaves, toothed leaflets, flowers much as in *Trifolium* but in long racemes, and ovoid tough and wrinkled pods.

1. **Melilòtus officinàlis** (Yellow Melilot). Upright, 2-4 ft. high; leaflets obovate-oblong, obtuse; flowers yellow. Waste or cultivated ground, from Europe.

2. **Melilòtus álba** (White Melilot). Leaves truncate; flowers white. Waste or cultivated ground, from Europe.

4. MEDICÀGO (Medick)

Herbs with pinnately 3-foliolate leaves, toothed leaflets, flowers nearly as in *Melilotus*, but the pod curved or variously coiled.

1. **Medicàgo satìva** (Lucerne. Alfalfa). Upright and smooth; leaflets obovate-oblong, toothed; purple flowers in racemes; pods spirally twisted. Cultivated for fodder, from Europe.

2. **Medicàgo lupulìna** (Black Medick). Procumbent and hairy; leaflets wedge-obovate, toothed at apex; yellow flowers in short spikes; pods curved into a kidney-form. Waste places, from Europe.

5. TEPHRÒSIA or CRÁCCA (Hoary Pea)

Hoary herbs with odd-pinnate leaves, minutely pointed veiny leaflets, racemes of white or purplish flowers, a 5-cleft calyx, round usually silky standard turned back, and linear flat pods.

1. **Tephròsia Virginiàna** or **Crácca Virginiàna.** Silky-villous with whitish hairs when young; stem erect, simple, 1-2 ft. high, leafy to the top; leaflets 17-29, linear-oblong; flowers large and numerous, in an oblong dense cluster, yellowish-white marked with purple. Dry sandy soil.

6. ROBÍNIA (Locust)

Tree with odd-pinnate leaves, ovate or oblong leaflets, showy flowers in hanging axillary racemes, a short 5-toothed calyx, large round standard turned back, and linear flat pods. (See *Pl. R.* and *Pl. St.*, p. 125, Fig. 131.)

1. **Robínia Pseudacàcia** (Common Locust). Large tree; racemes slender and loose, with fragrant white flowers; pods smooth. Commonly cultivated.

7. WISTÀRIA or KRAÙHNIA (Wistaria)

Woody high-climbing twiners with pinnate leaves, lance-ovate leaflets, dense racemes of large and showy purple or blue flowers, a somewhat 2-lipped calyx, large roundish standard turned back, scythe-shaped keel, and elongated thickish and knobby stalked pods.

1. **Wistària frutéscens** or **Kraùhnia frutéscens** (American Wistaria). Downy when young; leaflets 9–15; flowers lilac-purple, the wings with one short and one very long appendage at the base. Often cultivated.

2. **Wistària Chinénsis** or **Kraùhnia Chinénsis** (Chinese Wistaria). Racemes long and pendent, with blue flowers; wings appendaged on one side only. Cultivated from China or Japan.

8. PÌSUM (Pea)

Smooth and pale herbs with pinnate leaves terminated by a tendril, 1–3 pairs of mostly entire leaflets, axillary clusters of showy flowers, a calyx with leafy lobes, a rigid style enlarged above and hairy down the inner edge, and flat or flattish pods with several globose seeds.

1. **Pìsum satìvum** (Common Pea). Leaflets commonly 2 pairs; stipules very large, leafy; tendrils branching; 2 or more flowers in a cluster; corolla white, bluish, purple, or variegated; pods somewhat fleshy. Cultivated from the Old World.

9. LÁTHYRUS (Vetchling)

Herbs with pinnate leaves usually ending in a tendril, axillary clusters of showy flowers, calyx-lobes not leafy, style flattened above and bearded down one face, and a flat or flattish pod.

* Leaflets a single pair.

1. **Láthyrus odoràtus** (Sweet Pea). Stem roughish-hairy, wing-margined; leaflets one pair, oval or oblong; flowers 2 or 3 on a long stalk, fragrant, white with the standard rose-color, or purple, or variously colored. Cultivated from Europe.

* * Leaflets more than one pair.

+ Stipules large.

2. **Láthyrus marítimus** (Beach Pea). Stout, smooth, 1 ft. high or more; leaflets 3–5 pairs, thick, ovate-oblong, 1–2 in. long; stipules broadly ovate and halberd-shaped, nearly as large as the leaflets; flowers large (¾ in. long), purple, 6–10 in a cluster. Seashores and shores of Great Lakes.

+ + Stipules small.

3. **Láthyrus venòsus.** Stout, climbing, usually somewhat hairy; leaflets 4–6 pairs, oblong-ovate, about 2 in. long; stipules very small, half-sagittate, and acuminate; flowers ½–⅝ in. long, purple, many in a cluster. Shaded banks.

4. **Láthyrus palústris.** Slender, smooth or somewhat hairy; stem often winged; leaflets 2–4 pairs, narrowly oblong to linear, acute, 1–2 in. long; stipules small, half-sagittate, lanceolate, sharp-pointed at both ends; flowers ½ in. long, purple, 2–6 in a cluster. Moist places.—The var. **myrtifólius** has broader leaflets and stipules.

10. PHASÈOLUS (Bean)

Twining herbs with pinnately 3-foliolate leaves, flowers in racemes, 5-toothed calyx, spirally coiled keel, style bearded along the upper side, and scythe-shaped or straight pods.

1. **Phasèolus vulgàris** (Kidney, String, or Pole Bean). Leaflets ovate, pointed; racemes of white, purplish, or variegated flowers shorter than the leaf; pods linear, straight. Cultivated for food from tropical America.

2. **Phasèolus perénnis** or **Phaséolus polystáchyus** (Wild Bean). Leaflets roundish-ovate, short-pointed; racemes of small purple flowers long and loose; pods drooping, scythe-shaped. Thickets.

XXXIX. GERANIACEÆ (Geranium Family)

Herbs or shrubs with lobed or divided leaves, 5 sepals, 5 petals, 10 stamens or less, and a deeply lobed ovary whose 5 carpels separate elastically from the elongated axis when mature.

1. **Geranium.** Herbs; petals similar; stamens 10.

2. **Pelargonium.** Somewhat shrubby; petals dissimilar; stamens less than 10.

1. GERÀNIUM (Cranesbill)

Herbs with forking stems, similar petals, and 10 stamens.

1. **Geránium maculàtum** (Wild Cranesbill). Stem erect, hairy; leaves 5-parted, the wedge-shaped divisions lobed and cut at the end; petals entire, light purple, bearded on the stalked base. Open woods and fields.

2. PELARGÒNIUM (Geranium)

Low and somewhat shrubby, with scented foliage, the 2 upper petals differing from the others in size or shape, and less than 10 (commonly 7) stamens with anthers. Natives of the Cape of Good Hope.

* Leaves crenate or somewhat lobed.

1. **Pelargònium zonàle** (Horseshoe Geranium). Leaves round and crenate, with a deep sinus, and usually with a horseshoe-shaped dark zone; petals narrow, scarlet, pink, or white.

2. **Pelargònium inquinans** (Scarlet Geranium). Soft-downy and clammy; leaves without the zone; petals broadly obovate, originally intensely scarlet.

3. **Pelargònium capitàtum** (Rose Geranium). Softly hairy; the roundish rose-scented leaves moderately lobed; the numerous small rose-purple flowers sessile in a head.

4. **Pelargònium odoratíssimum** (Nutmeg Geranium). Soft velvety; the fragrant leaves rounded and crenate, small; the small white flowers on short stalks.

* * Leaves pinnatifid or palmate.

5. **Pelargònium quercifòlium** (Oak-leaved Geranium). Hairy and glandular; leaves deeply sinuate-pinnatifid, with wavy-toothed blunt lobes; petals purple or pink, the two upper much the longest.

6. **Pelargònium gravèolens** (Heavy-scented Geranium). Hairy; the heavy-scented leaves palmately 5-7-lobed or -parted, and the oblong lobes pinnatifid; petals purple or pink.

XL. OXALIDACEÆ (Sorrel Family)

Herbs with alternate or basal 3-foliolate leaves, regular flowers, 5 sepals, 5 petals, 10 stamens usually united at base, 5 styles, and a 5-celled ovary becoming a 5-lobed pod.

1. ÓXALIS (Wood-sorrel)

Herbs with sour juice, and inversely heart-shaped leaflets (closing and drooping at night).

1. **Óxalis violàcea** (Violet Wood-sorrel). Nearly smooth, from a scaly bulb; leaves all basal; the naked stems 5-9 in. high, bearing an umbel of several violet flowers. Rocky ground.

2. **Óxalis stricta** (Yellow Wood-sorrel). Smooth or hairy, from running rootstocks; stems leafy, branching, bearing axillary flower-stalks longer than the leaves and with 2-6 yellow flowers.

XLI. ACERACEÆ (Maple Family)

Trees with opposite simple or compound leaves, small regular flowers, usually a 5-lobed colored calyx, petals often none, 3-12 stamens, 2 long styles, and a 2-lobed ovary ripening into a pair of winged fruits.

1. ÀCER (Maple)

Trees with palmately lobed leaves. (See *Pl. R.* and *Pl. St.*, p. 26, Fig. 20; also p. 115, Fig. 116; also *Plant Structures*, p. 212, Fig. 186.)

1. **Àcer saccharìnum** or **Àcer Sáccharum** (Sugar or Rock Maple). A large tree; leaves 3-5-lobed, with rounded sinuses and pointed sinuate-toothed lobes, whitish and smooth or a little downy on the veins beneath; flowers in terminal and lateral umbel-like clusters appearing with the leaves, drooping on very slender hairy stalks; wings of fruit broad, usually slightly diverging. Rich woods. — The var. **nigrum** (Black Maple) has leaves scarcely paler beneath, the wider lobes often shorter and entire.

2. **Àcer dasycárpum** or **Àcer saccarhìnum** (White or Silver Maple). Ornamental tree; leaves very deeply 5-lobed, with rather acute sinuses, silvery

white underneath, the divisions narrow, cut lobed and toothed; flowers in lateral umbel-like clusters on short stalks, much preceding the leaves; stamens 3 6; fruit with large divergent wings. Moist ground.

XLII. HIPPOCASTANACEÆ (Horsechestnut Family)

Trees with opposite palmately compound leaves, irregular flowers, a 5-lobed calyx, 4 or 5 petals, 5–10 stamens, and a 2–3-celled ovary becoming a leathery pod.

1. ÆSCULUS (Horsechestnut. Buckeye)

Trees with obovate serrate leaflets, flowers in terminal crowded clusters, more or less unequal petals on slender stalks, usually 7 stamens, 1 style, and a leathery pod inclosing 1–3 very large chestnut-like seeds. (See *Plant Structures*, p. 235, Fig. 218.)

1. **Æsculus glàbra** (Ohio Buckeye). A large tree; leaflets 5, nearly smooth; stamens curved, longer than the pale-yellow corolla of 4 upright petals; fruit covered with prickles when young. Moist ground.

2. **Æsculus flàva** or **Æsculus octándra** (Sweet Buckeye). A large tree or shrub; leaflets 5 or 7, smooth or downy underneath; stamens shorter than the yellow corolla of 4 conniving petals; fruit smooth. Rich woods.

3. **Æsculus Hippocástanum** (Common Horsechestnut). Tall ornamental tree; leaflets 7; corolla of 5 spreading petals, white spotted with purple and yellow; stamens declined; fruit covered with prickles when young. Cultivated from Asia.

XLIII. BALSAMINACEÆ (Balsam Family)

Tender herbs with simple mostly alternate leaves, very irregular spurred flowers, 5 or 8 distinct stamens, and a 3 5-celled ovary becoming a pod or fleshy fruit.

1. **Impatiens.** Leaves not peltate; stamens 5; ovary 5-celled; pod elastically bursting.

2. **Tropæolum.** Leaves peltate; stamens 8; ovary 3-lobed; fruit fleshy.

1. IMPÀTIENS (Balsam. Jewel-weed. Touch-me-not)

Succulent herbs with calyx and corolla colored alike and with a spurred sac, 5 stamens, a sessile stigma, a 5-celled ovary, and a pod which bursts open elastically and projects the seeds.

1. **Impàtiens pállida** or **Impàtiens aùrea** (Pale Touch-me-not). Branching stems 1–4 ft. high; leaves oval, toothed, petioled; flowers pale yellow, sparingly dotted with reddish-brown, the sac inflated and very obtuse (broader than long) and tipped with a short incurved spur. Moist ground.

2. **Impàtiens fúlva** or **Impàtiens biflòra** (Spotted Touch-me-not). Stems and leaves as in the preceding; flowers orange, thickly spotted with reddish-brown, the sac acutely conical (longer than broad) and tapering into a strongly inflexed spur half as long as the sac. Moist ground.

3. **Impàtiens Balsámina** (Garden Balsam). Low, with crowded lanceolate leaves, the lower opposite; showy flowers in axillary clusters, varying in shade from white to red and purple, often double. Cultivated from India.

2. TROPÆOLUM (Nasturtium)

Succulent herbs with pungent juice, peltate leaves, solitary axillary flowers, 5 sepals united at base and on the upper side extended into a long descending spur, 5 petals (the 2 upper different from the others), 8 dissimilar stamens, a single style, and a 3-lobed ovary becoming 3 fleshy fruits each containing a single large seed.

1. **Tropæolum màjus.** Leaves roundish and about 6-angled, peltate toward the middle; petals all shades of yellow and red, the three lower and longer stalked ones fringed at base. Cultivated from South America.

XLIV. VITACEÆ (Vine Family)

Shrubs usually climbing by tendrils, with alternate simple or compound palmate leaves, small flowers, minute calyx, 4 or 5 petals with as many stamens opposite them, a 2-celled ovary, and fruit a berry usually 4-seeded.

1. **Vitis.** Plants climbing by the coiling of naked-tipped tendrils; leaves simple.

2. **Ampelopsis.** Plants climbing by sucker-like disks at the tips of tendrils; leaves palmately compound.

1. VÌTIS (Grape)

Shrubs climbing by the coiling of naked tendrils, with simple rounded and heart-shaped leaves, very fragrant clusters of flowers with petals falling off without opening, and a short style or none.

1. **Vitis cordifòlia** (Frost Grape). Leaves smooth, thin, heart-shaped, little lobed, coarsely and sharply toothed; flowers with a mignonette-like fragrance; fruit small, bluish or black, very sour. Moist ground.

2. **Vitis Labrúsca.** A tendril (or flower cluster) opposite every leaf; the large entire or lobed leaves and young shoots very cottony, continuing rusty woolly beneath; fruit large, dark purple or amber color. Moist ground. The original of the most common cultivated American grapes.

2. AMPELÓPSIS or PARTHENOCÍSSUS

Shrubs climbing by tendrils fixing themselves by sucker-like disks at the tips, with palmately compound leaves, and thick petals expanding before they fall.

1. **Ampelópsis quinquefòlia** or **Parthenocíssus quinquefòlia** (Virginia Creeper. Woodbine). Climbing extensively; leaflets 5, lance-oblong, cut-

toothed, changing to crimson in autumn; berries small, black or bluish. Low or rich ground. (See *Pl. R.* and *Pl. St.*, p. 63, Figs. 53, 54.)

2. **Ampelópsis tricuspidàta** or **Parthenocíssus tricuspidàta** (Japan Ivy. Boston Ivy). Branching profusely and adhering by much-branched tendrils; leaves very variable, roundish-ovate and serrate or heart shaped, 3-lobed or even 3-foliolate, shining and thickish. Cultivated from Japan.

XLV. TILIACEÆ (Linden Family)

Trees with alternate leaves, 5 sepals, 5 petals, numerous stamens cohering in 5 clusters, a single style, and a 5-celled ovary becoming a dry and woody globular fruit.

1. TÍLIA (Linden. Basswood)

Trees with soft wood, mostly heart-shaped and serrate leaves (oblique and often truncate at base), and small clusters of fragrant cream-colored flowers hanging on a stalk which is united to a long and narrow leaf-like bract. (See *Pl. R.* and *Pl. St.*, p. 116, Fig. 119; also *Pl. St.*, p. 196, Fig. 173.)

1. **Tília Americàna.** Leaves large, green and smooth or nearly so. Rich woods.

XLVI. MALVACEÆ (Mallow Family)

Herbs or shrubs with alternate leaves, 5 sepals united at base, 5 petals, numerous stamens united into a column, and numerous ovaries united into a ring or forming a several-celled pod.

1. **Malva.** Flowers with a 3-leaved involucre at base; petals whitish; fruit a ring of blunt carpels.

2. **Abutilon.** Flowers naked at base; petals yellow; fruit a pod separating into numerous beaked carpels.

1. MÁLVA (Mallow)

Low herbs with a 3-leaved involucre at base of calyx like an outer calyx, inversely heart-shaped petals, and numerous ovaries united into a ring around a central axis and forming a flattened fruit which separates at maturity into as many kidney-shaped blunt carpels.

1. **Málva rotundifòlia** (Common Mallow). Stems procumbent; leaves round heart-shaped on very long petioles, crenate, obscurely lobed; petals whitish, twice the length of the calyx; carpels hairy. Roadsides and cultivated grounds.

2. ABÙTILON (Indian Mallow)

Usually tall herbs with large leaves, calyx naked at base, entire petals, and the ripe pod separating into 5 or more 2-9-seeded carpels.

1. **Abùtilon Avicénnæ** or **Abùtilon Abùtilon** (Velvet Leaf). Tall, 3–5 ft. high; leaves roundish heart-shaped, taper-pointed, velvety; flowers (1–3) yellow, on stalks shorter than the petioles; carpels 12–15, hairy, beaked. Waste places, from India.

XLVII. VIOLACEÆ (Violet Family)

Herbs with leaves all basal or alternate and with stipules, axillary nodding flowers, 5 sepals, an irregular 1-spurred corolla of 5 petals, 5 stamens conniving over the pistil, a single style, and a 1-celled ovary becoming a pod which splits into 3 divisions.

1. VÌOLA (Violet)

Herbs with sepals extended into ears at base, the lower petal spurred at base, the 2 lower stamens bearing spurs which project into the spur of the corolla, and a club-shaped style. (See *Pl. R.* and *Pl. St.*, p. 117, Fig. 121; also *Plant Structures*, p. 229, Fig. 211.) The following species have been much subdivided, and represent groups of species rather than single species:

* Stipules never leaf-like.

\+ Leaves all from the rootstock.

++ Flowers blue.

1. **Viola pedàta** (Bird-foot Violet). Nearly smooth; leaves 3–5-divided, the lateral divisions 2 3-parted, all narrow; flower large, 1 in. broad, pale or deep lilac purple or blue. Sandy soil.

2. **Viola palmàta** (Common Blue Violet). Smooth or hairy; early leaves roundish heart-shaped or kidney-shaped and crenate, the sides rolled inward when young; later leaves palmately or hastately lobed; flowers violet or purple, the lateral petals bearded. Moist or dry ground.—The var. **cucullàta** has the later leaves merely crenate, not lobed.

3. **Viola sagittàta** (Arrow-leaved Violet). Smooth or hairy; leaves varying from oblong heart-shaped to halberd-shaped, arrow shaped or ovate, toothed; flowers rather large, purple-blue, the lateral petals bearded and the spur short and thick. Dry or moist sandy ground.

++ Flowers white.

4. **Viola blánda** (Sweet White Violet). Mostly smooth; leaves round heart-shaped or kidney form; petals white mostly with purple veins, small short-spurred, mostly beardless. Damp ground.

\+ + Stems leafy.

++ Flowers yellow.

5. **Viola pubéscens** (Yellow Violet). Soft hairy, 6–12 in. high; leaves very broadly heart-shaped, toothed; stipules entire; petals yellow, the lower ones veined with purple; spur very short. Woods.

++ ++ Flowers not yellow.

6. **Viola Canadénsis** (Canada Violet). Upright, 1–2 ft. high; leaves heart-shaped, pointed, serrate; stipules entire; flowers white or whitish inside, the upper petals mostly tinged with purple beneath, the latter ones bearded. Rich woods.

7. **Viola striàta** (Pale Violet). Stems ascending, 6–10 in. high; leaves heart-shaped, finely serrate; stipules fringe-toothed; flowers cream-colored or white, the lower petals striped with purplish lines, the lateral ones bearded; spur thickish and short. Low grounds.

* * Stipules large, leaf-like, pinnatifid.

8. **Viola trícolor** (Pansy). Stem angled and branched, leafy throughout; leaves roundish or the upper oval and the lower heart-shaped, crenate or entire; flowers variable in color or variegated (yellow, white, violet-blue, purple, etc.). Cultivated from Europe.

XLVIII. BEGONIACEÆ (Begonia Family)

Herbaceous or shrubby plants with alternate unequal-sided leaves, flowers in clusters on axillary stalks, sepals and petals colored alike, numerous stamens, 3 styles, and an inferior 3-angled ovary becoming a pod.

1. BEGÒNIA

Herbaceous or somewhat woody-stemmed plants with separate staminate and pistillate flowers. (See *Pl. R.* and *Pl. St.*, p. 25, Fig. 19.) Many species are in cultivation for their foliage or flowers.

1. **Begònia Rex.** Leaves all basal from a fleshy rootstock, large, obliquely heart-shaped, toothed or wavy-margined, bristly-hairy (especially on petioles), silvery-banded or silvery all over above, reddish or purple beneath; flowers rather large, pale and rose-colored. Cultivated from Asia for the foliage.

XLIX. THYMELÆACEÆ (Mezereum Family)

Shrubs with very tough bark, alternate entire leaves, a petal-like tubular calyx, no petals, 8 long stamens, a single slender style, and a 1-celled ovary becoming a 1-seeded berry-like fruit.

1. DÍRCA (Leatherwood. Moosewood)

Much branched shrub with oval-obovate leaves on very short petioles, clusters of 3 or 4 light yellow flowers preceding the leaves, calyx with wavy or obscurely 4-toothed border, and an oval reddish fruit.

1. **Dírca palústris.** Shrub 2–5 ft. high, with brittle wood but very tough fibrous bark. Moist rich woods.

L. ONAGRACEÆ (Evening Primrose Family)

Herbs with 4-parted (sometimes 2-parted) regular flowers, tubular calyx, 8 (or 2) stamens, a single style, and an inferior 2–4-celled ovary becoming a pod or berry.

* Calyx-lobes and petals 4 ; stamens 8.

+ Fruit a pod ; herbs.

1. **Epilobium.** Flowers small, not yellow ; lower leaves often opposite ; seeds silky-tufted.

2. **Œnothera.** Flowers often yellow ; leaves alternate ; seeds naked.

+ + Fruit a berry ; shrubs.

3. **Fuchsia.** Flowers showy ; the calyx-tube and petals differently colored ; leaves opposite.

* * Calyx-lobes and petals 2 ; stamens 2.

4. **Circæa.** Petals small, white, inversely heart-shaped ; fruit small and bur-like.

1. EPILÒBIUM (Willow-herb)

Herbs with nearly sessile leaves, violet, purple, or white flowers, calyx-tube not prolonged beyond the ovary, and pod containing numerous silky-tufted seeds. (See *Pl. R.* and *Pl. St.*, p. 112, Fig. 111 ; p. 113, Fig. 112 ; p. 128, Fig. 134 ; also *Plant Structures*, p. 212, Fig. 185.)

1. **Epilòbium angustifòlium** or **Chamænèrion angustifòlium** (Fireweed). Stem simple, tall, 4–7 ft. high ; leaves scattered, numerous and large, lanceolate, nearly entire ; flowers large, purple, in a long raceme. Low grounds, especially in newly cleared ground.

2. ŒNOTHÈRA (Evening Primrose)

Herbs with alternate leaves, yellow, white, or rose-colored flowers, calyx-tube prolonged beyond the ovary and with reflexed lobes, and pod containing numerous naked seeds.

1. **Œnothèra biénnis** or **Ónagra biénnis** (Common Evening Primrose). Rather stout and erect, 1–5 ft. high, leafy, more or less hairy ; leaves lanceolate or broader, 2–6 in. long, acute or acuminate, toothed ; yellow flowers in a leafy spike, opening in the evening ; calyx-tube slender, 1–2½ in. long ; pods stout and oblong, more or less hairy. Common.

2. **Œnothèra tríloba** or **Lavaùxia tríloba.** Nearly smooth, almost stemless, with leaves and flowers clustered ; leaves 2–10 in. long, long-petioled, oblanceolate, pinnatifid or toothed ; flowers white or rose-colored ; calyx-tube slender, 2–4 in. long ; petals ½–1 in. long ; pod ovate, ½–1 in. long, strongly winged and veiny. Plains.

3. FÙCHSIA

Tender shrubs or even trees with opposite or whorled leaves, showy flowers, tubular colored calyx much prolonged beyond the ovary and with spreading lobes, and fruit a berry.

1. **Fùchsia macrostémma.** Leaves toothed, on slender petioles; the red to white calyx with tube oblong or short-cylindrical, usually shorter than the spreading lobes, which are longer than the obovate violet or blue or deeply colored petals; sometimes with doubled flowers. Cultivated from South America.

4. CIRCÆA (Enchanter's Nightshade)

Low herbs with opposite thin leaves on slender petioles, racemes of small whitish flowers, tubular calyx with 2 reflexed lobes, 2 inversely heart-shaped petals, 2 stamens, and a 1–2-celled ovary becoming a small and bur-like fruit.

1. **Circæa Lutetiàna.** Taller, 1–2 ft. high; leaves ovate, slightly toothed; hairs of the roundish 2-celled fruit bristly. Damp woods.

2. **Circæa alpìna.** Low, 3–8 in. high, smooth and weak; leaves heart-shaped, coarsely toothed; hairs of obovate-oblong 1-celled fruit soft and slender. Damp woods.

LI. ARALIACEÆ (Ginseng Family)

Herbs, shrubs, or trees with characters as in *Umbelliferæ*, but with styles usually more than 2 and fruit berry-like.

1. ARÀLIA

Plants with compound leaves, white or greenish flowers in umbels, oblong or obovate petals, and 2–5 styles.

* Stems somewhat woody.

1. **Aràlia nudicaùlis** (Wild Sarsaparilla). Stem scarcely rising out of the ground, smooth, bearing a single long stalked leaf (1 ft. high) and a shorter naked flower-stalk with 2–7 umbels; leaflets oblong-ovate, pointed, serrate, 5 on each of the 3 divisions. Moist woods.

2. **Aràlia hìspida** (Bristly Sarsaparilla. Wild Elder). Stem 1–2 ft. high, bristly, leafy, ending in a stalk bearing several umbels; leaves twice pinnate; leaflets oblong-ovate, acute, toothed. Rocky and sandy places.

* * Low herbs.

3. **Aràlia trifòlia** or **Pànax trifòlium** (Dwarf Ginseng). Low herb with a deep globular root or tuber; stems 4–8 in. high, bearing a whorl of 3 palmately compound leaves, and a simple umbel on a slender stalk; leaflets 3–5, sessile at the summit of the leaf-stalk, narrowly oblong, obtuse; fruit yellowish. Rich woods.

LII. UMBELLIFERÆ (Parsley Family)

Herbs with alternate compound leaves having expanded sheathing petioles, small flowers in umbels, minute or obsolete calyx, 5 petals, 5 stamens, 2 styles, and an inferior 2-celled ovary which splits in fruit into 2 seed-like fruits. (See *Pl. R.*

and *Pl. St.*, p. 83, Fig. 77; also *Plant Structures*, p. 267, Fig. 253.)

* Fruit prickly or bristly.

1. **Daucus.** Bristly; leaves pinnately compound; flowers in large concave umbels; fruit prickly.

2. **Sanicula.** Smooth; leaves palmately parted; flowers in small heads; fruit prickly.

3. **Osmorhiza.** Smooth or hairy; leaves ternately compound; flowers in small umbels; fruit bristly.

* Fruit smooth; plants smooth.

4. **Zizia.** Plant 1–3 ft. high; leaflets broad and toothed; flowers yellow.

5. **Erigenia.** Low plant from deep tuber; leaf-segments narrow and entire; flowers white.

1. DAUCÙS (Carrot)

Bristly herbs with pinnately compound leaves, leafy and cleft bracts at the base of the umbels of white flowers, and oblong fruit bearing rows of barbed prickles.

1. **Daùcus Caròta.** Rays of the umbel numerous; umbels becoming strongly concave. Cultivated from Europe and running wild everywhere. (See *Pl. R.* and *Pl. St.*, p. 120, Fig. 126; also *Plant Structures*, p. 266, Fig. 252.)

2. SANÍCULA (Blacksnake Root)

Rather tall smooth herbs with few palmately parted leaves, irregular umbels of greenish or yellowish flowers in small heads, and globular fruit thickly clothed with hooked prickles.

1. **Sanícula Marylándica.** Stem 1–3 ft. high; leaves 3–7-parted, the divisions mostly sharply cut and serrate; sterile flowers numerous and on long stalks; styles longer than the prickles.

2. **Sanícula Canadénsis.** Resembling the last, but with few sterile flowers on short stalks, and styles shorter than the prickles.

3. OSMORHÌZA or WASHINGTÒNIA (Sweet Cicely)

Glabrous or hairy herbs 1–3 ft. high, from thick aromatic roots, with ternately compound leaves, ovate leaflets, white flowers, and linear very bristly fruit with prominent tail-like prolongation at base.

1. **Osmorhìza longístylis** or **Washingtònia longístylis.** Smooth or slightly hairy; leaflets 2–3 in. long, variously toothed, acuminate; style $\frac{1}{2}$ in. long or more.

2. **Osmorhìza brevístylis** or **Washingtònia Clàytoni.** Villous pubescent; leaves as in the last; style less than half as long.

4. ZÍZIA

Smooth herbs 1–3 ft. high, with ternately divided leaves (or the basal ones simple), broad toothed leaflets, yellow flowers, and ovate to oblong smooth fruit with slender ribs.

1. **Zízia aùrea.** Leaves 2-3-ternate, the basal very long-petioled; leaflets ovate to lanceolate, serrate; fruit oblong. Open ground.

2. **Zízia cordàta.** Basal leaves cordate or rounder, crenately toothed, rarely lobed; stem-leaves 3- or 5-divided, with leaflets as in the last; fruit ovate. Open ground.

5. ERIGÈNIA (Pepper-and-salt. Turkey Pea)

A small smooth spring plant with deep round tuber, simple stem, 1 or 2 ternately compound leaves, white flowers in a leafy-bracted umbel, and nearly round flattened fruit with very slender ribs.

1. **Erigènia bulbòsa.** Stem 3–9 in. high; leaf-segments linear-oblong. Rich open woods.

LIII. CORNACEÆ (Dogwood Family)

Usually shrubs with opposite (rarely alternate) simple leaves, 4 petals, 4 stamens, a single style, and an inferior 2-celled ovary becoming a 1- or 2-seeded fleshy stone fruit.

1. CÓRNUS (Cornel. Dogwood)

Herbs and shrubs with entire leaves, small flowers in open clusters or close heads, minutely 4-toothed calyx, and oblong spreading petals.

* Flowers greenish, in a close cluster surrounded by a large and showy 4-leaved corolla-like white or pinkish involucre.

1. **Córnus Canadénsis** (Dwarf Cornel. Bunch-berry). Stems low and simple, 5–7 in. high, from a slender creeping rootstock; lower leaves scale-like, the upper crowded into an apparent whorl of 6 or 4, ovate and pointed; leaves of the involucre ovate; fruit globular, bright red. Damp cold woods.

2. **Córnus flórida** (Flowering Dogwood). Tree 12–40 ft. high; leaves ovate, pointed; leaves of the involucre large and inversely heart-shaped; fruit oval, bright red. Dry woods.

* * Flowers white, in flat open clusters, with no involucre.

3. **Córnus stolonífera** (Red-osier Dogwood). Shrubs forming clumps, 3–6 ft. high; branches (especially the osier-like young ones) bright red-purple, smooth; leaves opposite, ovate, rounded at base, short-pointed, minutely hairy on both sides, whitish beneath; flowers in small loose clusters; fruit white or lead-color. Wet places.

4. **Córnus alternifòlia.** Shrub or tree 8–25 ft. high; branches greenish streaked with white, the alternate leaves clustered at the ends, ovate, long-pointed, whitish beneath; flower-clusters very broad and open; fruit deep blue on reddish stalks. Hillside thickets.

LIV. PYROLACEÆ (Pyrola Family)

Herbs with evergreen foliage, corolla of separate petals, 10 stamens, anthers opening by pores at base, depressed globose 5-lobed pods, and otherwise as in *Ericaceæ*.

1. **Chimaphila.** Stems leafy ; flowers in a terminal flat-topped cluster ; style very short.

2. **Pyrola.** Leaves all basal ; flowers in a raceme ; style long.

1. CHIMÁPHILA (Pipsissewa)

Low plants with long running underground shoots, evergreen thick and shining leaves, fragrant flowers in a terminal cluster, and orbicular widely spreading petals.

1. **Chimáphila umbellàta.** Leafy, 4–10 in. high ; leaves wedge-lanceolate, sharply serrate, not spotted ; flowers flesh color. Dry woods.

2. **Chimáphila maculàta** (Spotted Wintergreen). Plant 3–6 in. high ; leaves ovate lanceolate, obtuse at base, remotely toothed, the upper surface variegated with white. Dry woods.

2. PÝROLA (Wintergreen)

Low and smooth, with a cluster of rounded evergreen basal leaves, a simple raceme of nodding flowers on an upright stem, and concave more or less converging petals.

1. **Pýrola rotundifòlia.** Leaves thick and shining ; flowering stem 6–12 in. high, with raceme elongated ; lanceolate calyx lobes ½ or ⅓ the length of the obovate white petals. Damp or sandy woods.—The var. **incarnàta** has flesh-colored to rose-purple flowers.

LV. MONOTROPACEÆ (Indian-pipe Family)

Root-parasitic herbs entirely destitute of green foliage, with corolla sympetalous or of separate petals, and otherwise as in *Ericaceæ*.

1. MONÓTROPA (Indian Pipe)

Low and fleshy herbs, tawny, reddish, or white, parasitic on roots, the clustered stems springing from a ball of matted rootlets, with scales instead of leaves, the summit at first nodding but erect in fruit, corolla of 4 or 5 separate wedge-shaped petals, 8–10 stamens, and an ovoid grooved pod.

1. **Monótropa uniflòra** (Indian Pipe. Corpse Plant). Smooth waxy white throughout (turning black in drying), 3–8 in. high, 1-flowered. Dark rich woods.

2. **Monótropa Hypópitys** or **Hypópitys Hypópitys** (Pine Sap). Somewhat hairy or downy, tawny, whitish or reddish, 4–12 in. high ; flowers several in a scaly raceme, the terminal one usually 5-parted, the others 3–4-parted. Oak and pine woods.

LVI. ERICACEÆ (Heath Family)

Shrubs or small trees with regular sympetalous 4–5-parted flowers, as many or twice as many stamens (10 in ours), anthers opening by terminal holes (except *Epigæa*), solitary styles, and a superior 3–10-celled ovary becoming a pod (except *Arcto-*

staphylos). (See *Pl. R.*, p. 200, Fig. 167; also *Pl. St.*, p. 195, Fig. 172; also *Pl. S.*, p. 269, Fig. 254; p. 270, Fig. 255; p. 271, Fig. 256.)

* Flowers in axillary clusters; anthers opening through their whole length.

1. **Epigæa.** Prostrate or trailing, bristly-hairy; corolla tubular with flaring border.

* * Flowers in terminal clusters; anthers opening by terminal holes.

2. **Arctostaphylos.** Corolla urn-shaped; fruit berry-like.

3. **Kalmia.** Corolla bell-shaped, with 10 pockets in which the stamens are lodged; fruit a pod.

1. EPIGÆA (Trailing Arbutus)

Prostrate or trailing somewhat woody plant, bristly with rusty hairs, with evergreen rounded and heart-shaped alternate leaves on slender petioles, rose-colored flowers in small axillary clusters, corolla-tube hairy inside and with a flaring border, anthers opening lengthwise, and a globular 5-lobed pod.

1. **Epigæa rèpens.** Flowers appearing in early spring, fragrant and close to the ground, often hidden by the leaves. Sandy woods or rocky soil.

2. ARCTOSTÁPHYLOS (Bearberry)

Shrubs with alternate leaves, nearly white flowers in terminal clusters, urn-shaped corolla with a short revolute 5-toothed border, included stamens, and a berry-like fruit.

1. **Arctostáphylos Ùva-úrsi.** Trailing; leaves thick and evergreen, obovate or spatulate, entire, smooth; fruit red. Bare ground and rocks.

3. KÁLMIA (American Laurel)

Evergreen smooth shrubs with alternate or opposite entire thick leaves, showy flower in umbel-like clusters, corolla shallow bell-shaped with 10 pockets in which the 10 anthers are lodged, and a globose 5-celled pod.

1. **Kàlmia latifòlia** (Calico Bush. Mountain Laurel). Shrub 4–8 ft. high, sometimes much higher; leaves mostly alternate, bright green both sides, ovate lanceolate, acute; clusters of numerous large and very showy flowers terminal, varying from deep rose color to white. Rocky hills and damp soil.

2. **Kálmia angustifòlia** (Sheep Laurel). Shrub 1–3 ft. high; leaves mostly opposite or in whorls of 3, pale or whitish beneath, light green above, narrowly oblong, obtuse; flower clusters lateral, more crimson and smaller than in the preceding. Hillsides.

LVII. VACCINIACEÆ (Whortleberry Family)

Like *Ericaceæ*, but ovary inferior and forming an edible berry or berry-like fruit.

1. **Gaylussacia.** Ovary 10-celled, with a single ovule in each cell.

2. **Vaccinium.** Berry 4-5-celled (or imperfectly 8–10-celled), many-seeded.

1. GAYLUSSÁCIA (Huckleberry)

Branching shrubs, commonly sprinkled with resinous dots, flowers in lateral racemes, white tinged with purple or red, like *Vaccinium* except that the ovary is 10-celled, and the berry-like fruit containing 10 nut-like seeds.

1. **Gaylussácia resinòsa.** Hairy when young, 1–3 ft. high; leaves oval to ovate, thickly clothed as well as the flowers with shining resinous globules, entire; bracts and bractlets reddish; fruit black. Rocky woods and swamps.

2. VACCÍNIUM (Blueberry. Cranberry)

Shrubs with simple leaves, solitary or clustered white or reddish flowers, corolla with 4- or 5-cleft revolute border, 8 or 10 stamens with anthers prolonged upward into a tube, and a 4- or 5-celled edible berry with many seeds.

* Corolla 5-lobed; anthers protruding and with 2 horns on the back.

1. **Vaccínium stamíneum** (Deerberry). Diffusely branching, 2–3 ft. high, somewhat hairy; leaves ovate, pale beneath; corolla greenish-white or purplish, shorter than the stamens; berries greenish or yellowish. Dry woods.

* * Corolla 5-toothed; anthers included and with no horns on the back.

2. **Vaccínium Pennsylvánicum** (Dwarf Blueberry). Dwarfed, 6–15 in. high, smooth; leaves lanceolate or oblong, serrulate with bristle pointed teeth, smooth and shining both sides; berries bluish black. Dry hills.

3. **Vaccínium vacíllans** (Low Blueberry). Low, 1–2½ ft. high, smooth; leaves obovate or oval, very pale or dull at least beneath, minutely serrulate or entire; berries bluish-black. Dry places.

4. **Vaccínium corymbòsum** (Common Blueberry). Tall, 5–10 ft. high; leaves ovate to oblong, entire or serrate, green and smooth on both sides or pale or hairy beneath; berries bluish-black. Swamps and low thickets.

* * * Corolla 4-parted; anthers projecting and without horns.

5. **Vaccínium macrocárpon** or **Oxycóccus macrocárpus** (American Cranberry). Stems very slender and elongated, creeping or trailing, the flowering branches ascending; leaves oblong, obtuse, small, entire, whitened beneath; the pale rose-colored flowers nodding; berries red, sour. Peat bogs.

LVIII. PRIMULACEÆ (Primrose Family)

Herbs with simple leaves, regular sympetalous flowers, 5 stamens opposite the corolla-lobes, a single style, a 1-celled ovary with ovules on a free central axis, and fruit a pod.

* Leaves all clustered at the base.

+ Flowers in an umbel; plants from fibrous roots.

1. **Primula.** Corolla funnel-form with spreading lobes; stamens included.

2. **Dodecatheon.** Corolla-lobes strongly reflexed; stamens forming a slender projecting cone.

+ + Flowers solitary; plants from fleshy biscuit-shaped rootstock.

3. **Cyclamen.** Corolla and stamens as in *Dodecatheon.*

* * Stems leafy.

4. **Lysimachia.** Flowers yellow ; leaves mostly opposite or whorled.
5. **Samolus.** Flowers white ; leaves alternate.

1. PRÍMULA (Primrose)

Herbs with flowers in an umbel, a 5-toothed calyx, a funnel-form corolla with spreading lobes, and stamens on the corolla-tube.

1. **Prímula Sinénsis** (Chinese Primrose). Downy plant ; leaves round-heart-shaped, 7–9-lobed, variously cut or even crisped ; calyx large and loose, much inflated ; flowers in large and showy umbels, purple, rose, or white. Cultivated from China.

2. **Prímula grandiflòra** (True Primrose). Leaves somewhat hairy beneath, wrinkled-veiny, cordate or spatulate and tapering into short winged petioles ; flowers on slender axillary stalks, yellow ; calyx tubular or bell-shaped, angled, not truly inflated. Cultivated from Europe.

2. DODECÀTHEON (American Cowslip. Shooting Star)

Smooth herbs with fibrous roots, a basal cluster of oblong or spatulate leaves, a single naked stem bearing a large umbel of showy rose-colored or white flowers nodding on slender stalks, deeply 5-cleft calyx with reflexed divisions, corolla with very short tube and long and narrow reflexed divisions, and anthers approximate in a slender cone.

1. **Dodecàtheon Meàdia.** Rich woods, and often cultivated.

3. CÝCLAMEN

Herbs with flat tuber-like rootstock, and flowers as in *Dodecatheon*, but solitary on the stalks.

1. **Cyclamen Europæum.** Leaves thick and heart-shaped, often marked with white above and red or violet beneath ; flowers fragrant, rose-colored, pink, or white, nodding on the stalk. Cultivated from Europe.

4. LYSIMÀCHIA (Loosestrife)

Herbs with leafy stems, yellow flowers on slender axillary stalks or in racemes, 5-6-parted calyx, wheel-shaped corolla with entire divisions, and stamens commonly united at base.

* Stems erect.

1. **Lysimàchia quadrifòlia.** Somewhat hairy ; stem simple, 1–2 ft. high ; leaves in whorls of 4 or 5 (sometimes 2, 3, or 6), ovate-lanceolate ; flowers on long slender stalks from the axils of the upper leaves; corolla dark-dotted or streaked. Moist or sandy soil.

2. **Lysimàchia stricta** or **Lysimàchia terréstris.** Smooth ; stem at length branched, very leafy, 1–2 ft. high; leaves opposite, rarely alternate, lanceolate ; flowers in a long raceme leafy at base ; corolla dark-dotted or streaked. Low grounds.

* * Stems trailing and creeping.

3. **Lysimàchia Nummulària** (Moneywort). Smooth; leaves roundish, small; flowers large, solitary on stalks from the axils of ordinary leaves; corolla not dark-dotted nor streaked. Cultivated from Europe, and often escaped.

5. SÁMOLUS (Water Pimpernel. Brook-weed)

Smooth herbs with alternate entire leaves, racemes of small white flowers, 5-cleft calyx, bell shaped 5-cleft corolla, included stamens, and a globose pod.

1. **Sámolus Valerándi Americànus** or **Sámolus floribúndus.** Stem slender, becoming diffusely branched, 6–12 in. high, leafy; leaves obovate or spatulate, the basal ones clustered; racemes often compound. Wet places.

LIX. OLEACEÆ (Olive Family)

Trees or shrubs with opposite leaves, 4-cleft calyx or none, regular 4-cleft corolla or none, 2 stamens, and a 2-celled ovary becoming a winged fruit or pod.

1. **Fraxinus.** Trees; leaves pinnately compound; fruit winged.
2. **Syringa.** Shrubs; leaves entire; fruit a pod.

1. FRÁXINUS (Ash)

Large trees with compound pinnate leaves of 3–15 toothed or entire leaflets, small flowers in crowded clusters from the axils of last year's leaves, staminate and pistillate flowers on different plants, small calyx, 4 petals or none, usually 2 stamens, a single style, and fruit flattened and winged at apex.

1. **Fráxinus Americàna** (White Ash). Large tree with gray furrowed bark and rusty-colored buds; branchlets and petioles smooth; leaflets 7–9, lanceolate to ovate, pointed, pale and either smooth or hairy beneath, entire or sparingly toothed; fruit marginless below, abruptly dilated into a lanceolate or wedge-linear wing 2 or 3 times as long as the cylindrical body. Rich or moist woods.

2. **Fráxinus pubéscens** or **Fráxinus Pennsylvánica** (Red Ash). Inner face of outer bark of branches red or cinnamon-color when fresh; branchlets and petioles velvety-hairy; leaflets 7–9, lanceolate to ovate, taper-pointed, pale or more or less hairy beneath, almost entire; fruit with the edges gradually dilated into the linear or spatulate wing. Low grounds.

3. **Fráxinus víridis** or **Fráxinus lanceolàta** (Green Ash). Smooth throughout; leaflets 5–9, often wedge-shaped at base and serrate above, bright green both sides; fruit as in the red ash. Along streams.

2. SYRÍNGA (Lilac)

Tall shrubs with entire leaves, crowded clusters of fragrant flowers, 4-toothed calyx, tubular corolla with 4 spreading lobes, and fruit a pod.

1. **Syringa vulgàris** (Common Lilac). Bush with ovate and more or less heart-shaped leaves green on both sides; flowers lilac or pale violet, varying to white. Cultivated from Europe. (See *Pl. S.*, p. 58, Fig. 41; also *Pl. St.*, p. 274, Fig. 241.)

LX. APOCYNACEÆ (Dogbane Family)

Herbs or woody plants with opposite entire leaves, regular sympetalous flowers with parts in 5s, 2 distinct ovaries or a 2-celled ovary, and fruit a pod.

1. **Apocynum.** Erect; flowers in terminal clusters; ovaries and pods 2.
2. **Vinca.** Trailing or creeping; flowers solitary and axillary; ovary and style 1.

1. APÓCYNUM (Dogbane)

Herbs with upright branching stems, small and pale flowers in flattish clusters, bell-shaped 5-cleft corolla, stamens on base of corolla and with anthers converging about the stigma, and 2 distinct ovaries united at tip by the stigma and becoming 2 long slender pods containing seeds with a tuft of long silky hairs at the apex. (See *Plant Structures*, p. 272, Fig. 257.)

1. **Apócynum androsæmifòlium** (Spreading Dogbane). Branches forking and spreading; leaves ovate, distinctly petioled; flower-clusters loose and spreading; corolla pale rose-color, open bell-shaped, with revolute lobes, the tube much longer than the divisions of the calyx. Borders of thickets.

2. **Apócynum cannábinum** (Indian Hemp). Stem and branches upright or ascending; leaves oval to oblong, sessile or short-petioled; flower-clusters erect and closely many-flowered; corolla greenish-white, with nearly erect lobes, the tube not longer than the divisions of the calyx. Moist ground.

2. VÍNCA (Periwinkle)

Low trailing or creeping plants with axillary and solitary flowers, corolla with funnel-form tube and spreading 5-lobed border, stamens on upper or middle part of tube, a single curiously capped style, and 2 ovaries which ripen into short many-seeded pods containing naked rough seeds.

1. **Vínca mìnor** (Common Periwinkle). Spreading extensively; evergreen; leaves ovate and shining; flowers blue (sometimes white), with wedge-shaped lobes. Cultivated from Europe. Sometimes wrongly called "myrtle."

LXI. CONVOLVULACEÆ (Convolvulus Family)

Twining or trailing herbs with alternate leaves, 5 separate sepals, 5-lobed sympetalous corolla, 5 stamens, a single style, and a superior 2- or 3-celled ovary becoming a globular few-seeded pod. (See *Plant Structures*, p. 270; also p. 273, Fig. 258.)

1. **Ipomœa.** Style undivided and with a knob-like stigma.
2. **Convolvulus.** Style with 2 slender or oval stigmas.

1. IPOMŒA (Morning Glory)

Twining or trailing herbs with showy flowers, funnel-form corolla twisted in bud, and an undivided style with knob-like stigma.

1. **Ipomœ̀a purpùrea** (Common Mor ing Glory). Stems hairy; leaves heart-shaped, acuminate, entire; peduncles long, bearing a 3-5-flowered umbel-like cluster; calyx bristly-hairy below; corolla 2 in. long, purple varying to white; ovary 3-celled. Cultivated from tropical America. (See *Plant Structures*, p. 228, Fig. 209.)

2. **Ipomœ̀a panduràta** (Wild Potato-vine. Man-of-the-earth). Smooth or nearly so, trailing or twining, from a huge root; leaves heart-shaped, acuminate; peduncles 1 5-flowered; sepals smooth; corolla 3 in. long, white with purple in the tube; ovary 2-celled. Dry ground.

2. CONVÓLVULUS (Bindweed)

Trailing, twining, or erect herbs with funnel-form to bell-shaped corolla, and a single style with 2 slender or oval stigmas.

1. **Convólvulus sèpium** (Hedge Bindweed). Smooth or somewhat hairy; stem twining or extensively trailing; leaves triangular-halberd-shaped or arrow-shaped, acute or pointed, the basal lobes obliquely truncate and often toothed or lobed; calyx inclosed in 2 broad leafy bracts; corolla white or tinged with rose; stigmas oval. Along streams. (See *Plant Structures*, p. 273, Fig. 258.)—The var. **Americànus** is smooth and has pink or rose-purple flowers.—The var. **rèpens** is hairy, with leaves more narrowly arrow-shaped or heart-shaped and the basal lobes obtuse or rounded and entire, and white to rose-colored flowers.

2. **Convólvulus arvénsis** (Bindweed). Stems low, prostrate, or twining; leaves ovate-oblong, arrow-shaped, with acute basal lobes; calyx without inclosing bracts; corolla white or tinged with red; stigmas very slender. Fields, from Europe.

LXII. POLEMONIACEÆ (Polemonium Family)

Herbs with alternate or opposite leaves, regular 5-parted sympetalous flowers, 5 stamens on the corolla-tube, a 3-lobed style, and a superior 3-celled ovary becoming a pod.

* Erect or diffuse herbs.

1. **Phlox.** Corolla tubular with flaring border; leaves opposite, entire.
2. **Polemonium.** Corolla bell-shaped; leaves alternate, pinnately compound.

* * Tall-climbing by compound tendrils.

3. **Cobæa.** Corolla bell-shaped; leaves alternate, pinnately compound.

1. PHLÓX

Herbs (rarely a little shrubby) with opposite sessile entire leaves, terminal clusters of flowers, narrow tubular calyx, corolla with long tube and 5 flaring lobes, and stamens very unequally inserted and included in the tube. (See *Pl. R.* and *Pl. St.*, p. 80, Fig. 74*b*; also *Plant Structures*, p. 228, Fig. 210*b*.)

* Herbs with flat leaves.

+ Flower clusters oblong.

1. **Phlóx maculàta** (Wild Sweet William). Smooth or barely roughish; stem erect, 1 2 ft. high, spotted with purple; lower leaves lanceolate, the upper

broader, tapering to the apex from the broad base ; corolla pink-purple, varying to white, with entire lobes. Rich woods and moist ground.

+ + Flower clusters flat-topped.

2. **Phlóx pilòsa.** Stems slender, nearly erect, 1–1½ ft. high, usually hairy ; leaves lanceolate or linear, commonly tapering to a sharp point, hairy ; corolla varying from rose-color to white, its lobes obovate and entire. Dry ground.

3. **Phlóx divaricàta.** Stems spreading or ascending, 9–18 in. high ; leaves oblong or ovate, acutish ; lobes of the pale lilac or bluish corolla, obovate and notched at the end or often entire. Rocky damp woods.

* * Somewhat shrubby and creeping ; leaves crowded, very narrow, and rigid.

4. **Phlóx subulàta** (Ground or Moss Pink). In broad depressed mats, hairy at least when young ; leaves short, very narrow, and rigid ; corolla pink-purple or rose-color with a darker center and wedge-shaped notched (rarely entire) lobes. Dry rocky and sandy ground.

2. POLEMÒNIUM (Greek Valerian)

Herbs with alternate pinnately compound leaves, flattish clusters of blue or white flowers, bell-shaped calyx and corolla, and stamens inserted at the summit of the very short corolla-tube.

1. **Polemònium réptans.** Smooth or slightly hairy ; stems weak and spreading, 6–10 in. high ; leaflets 5–15, ovate to oblong ; a few nodding flowers in a cluster ; stamens and style included ; corolla light blue about ½ in. broad. Woods.

2. **Polemònium cærùleum** or **Polemònium Van Brúntiæ** (Jacob's Ladder). Stem erect, 1 3 ft. high ; leaflets 9–21, narrowly to broadly lanceolate, mostly crowded ; flowers numerous in a rather dense cluster ; stamens and style mostly protruding beyond the bright-blue corolla, which is nearly 1 in. broad. Common in cultivation.

3. COBÆA

Herbs tall climbing by compound tendrils on the alternate pinnate leaves with showy axillary flowers, calyx of 5 large leaf-like divisions, bell-shaped corolla with short and broad spreading lobes, and stamens turned downward.

1. **Cobæa scándens.** Smooth ; leaflets ovate ; corolla dull purple or greenish, 2 in. or more long ; the long filaments coiling spirally when old. Cultivated from Mexico.

LXIII. HYDROPHYLLACEÆ (Waterleaf Family)

Mostly hairy herbs with alternate leaves, 5-parted calyx, bell-shaped sympetalous 5-lobed corolla, 5 stamens on the corolla-tube, a 2-cleft style, and a superior 1-celled ovary becoming a many-seeded pod.

1. **Hydrophyllum.** Flowers in flattish clusters ; pod globular, 1-celled.

2. **Phacelia.** Flowers in one-sided racemes ; pod ovoid, incompletely 2-celled.

1. HYDROPHÝLLUM (Waterleaf)

Herbs with large petioled leaves, flattish clusters of white or pale-blue flowers, mostly protruding stamens, and a 1-celled bristly-hairy ovary.

1. **Hydrophýllum Virgínicum.** Smoothish, 1–2 ft. high; leaves pinnately divided, the divisions 5–7, ovate to oblong, pointed, sharply toothed; flower-stalks longer than the petioles of the upper leaves; calyx-lobes bristly. Rich woods.

2. **Hydrophýllum Canadénse.** Nearly smooth, 1 ft. high; leaves broad, palmately 5–7-lobed, rounded, heart-shaped at base, unequally toothed; flower-stalks mostly shorter than the petioles; calyx-lobes nearly smooth. Damp rich woods.

3. **Hydrophýllum appendiculàtum.** Hairy; stem-leaves palmately 5-lobed, rounded, the lobes toothed and pointed, the lowest pinnately divided; calyx with a small reflexed lobe in each sinus, bristly; stamens but little protruding. Damp woods.

2. PHACÈLIA

Herbs with simple or divided leaves, handsome blue, purple, or white flowers in one-sided racemes, stamens often protruding, and an imperfectly 2 celled ovary.

1. **Phacèlia bipinnatífida.** Stem upright, hairy, 1–2 ft. high; leaves long-petioled, pinnately 3–5-divided, the divisions ovate, acute, lobed; corolla bright blue, with hairy folds within and entire lobes; stamens and style protruding. Shaded rich soil.

2. **Phacèlia Púrshii.** Sparsely hairy, 8–12 in. high; leaves pinnately 5–9-divided, the divisions oblong or lanceolate, the upper leaves clasping; corolla light blue varying to white, with no folds within, the lobes fringed; stamens and style rarely protruding. Shaded rich soil.

LXIV. BORAGINACEÆ (Borage Family)

Mostly rough hairy herbs with alternate entire leaves, 5-parted calyx, regular 5-lobed sympetalous corolla, 5 stamens on the corolla-tube, a single style, and a deeply 4-lobed superior ovary (except *Heliotropium*) becoming 4 seed-like nutlets.

* Ovary not lobed.

1. **Heliotropium.** Corolla tubular with flaring border; stamens included.

* * Ovary deeply 4-parted.

+ Smooth plants.

2. **Mertensia.** Flowers trumpet-shaped, purplish-blue, in terminal clusters.

+ + Rough hairy plants.

3. **Cynoglossum.** Flowers white, purple, or blue; nutlets prickly.

4. **Lithospermum.** Flowers yellow; nutlets smooth, white and shining.

1. HELIOTRÒPIUM (Heliotrope)

Hairy plants with small flowers in one-sided spikes, funnel-form corolla, nearly sessile included anthers, short style, and an undivided 4-celled ovary which in fruit splits into 4 nutlets.

1. **Heliotròpium Peruviànum** (Common Heliotrope). Stems woody; leaves ovate, very wrinkled, veiny; spikes in terminal and forking clusters; flowers pale blue-purple and very fragrant. Cultivated from Peru.

2. MERTÉNSIA (Lungwort)

Smooth herbs with pale leaves, handsome purplish-blue (rarely white) flowers in terminal clusters, trumpet-shaped corolla much longer than calyx, and fleshy dull and roughish nutlets.

1. **Merténsia Virgínica** (Virginian Cowslip. Lungwort. Bluebells). Very smooth, pale, erect, 1-2 ft. high; leaves obovate, veiny; corolla 1 in. long, rich purple-blue (rarely white), commonly purple in bud and changing to blue when open. Rich ground, and often cultivated.

3. CYNOGLÓSSUM (Hound's Tongue)

Coarse strong-scented herbs with petioled lower leaves, nearly naked clusters of small flowers, funnel-form corolla with tube about equaling the calyx and with closed throat and rounded lobes, included stamens, and nutlets covered all over with short barbed or hooked prickles.

1. **Cynoglóssum officinàle** (Common Hound's Tongue). Leafy, clothed with short soft hairs, branching above; upper leaves lanceolate, closely sessile by a roundish base; corolla reddish-purple, rarely white; nutlets flat on the broad upper face. Waste grounds, from Europe.

2. **Cynoglóssum Virgínicum** (Wild Comfrey). Roughish with spreading bristly hairs; stem simple, few-leaved, 2-3 ft. high; stem-leaves lanceolate-oblong, clasping by a deep heart-shaped base; flower clusters raised on long naked stalks; corolla pale blue; nutlets strongly convex. Open woods.

4. LITHOSPÉRMUM (Gromwell. Puccoon)

Herbs with sessile leaves, solitary and axillary or spiked flowers, funnel-form corolla with spreading 5-cleft border, nearly sessile included anthers, and smooth and ivory-white bony nutlets.

1. **Lithospérmum hírtum** or **Lithospérmum Gmélini.** Hispid with bristly hairs, 1–2 ft. high; stem-leaves lanceolate or linear, those of the flowering branches ovate-oblong, bristly-ciliate; flowers distinctly stalked, crowded, showy; corolla deep orange yellow, woolly at the base inside; fruiting calyx 3–4 times longer than the shining nutlets. Barrens.

2. **Lithospérmum canéscens** (Yellow Puccoon). Softly hairy, 6–15 in. high; leaves obtuse, linear-oblong, or the upper broader, more or less downy beneath and roughish above; flowers sessile; corolla deep orange-yellow, naked at base within; fruiting calyx barely twice the length of the nutlets. Sandy plains and open woods.

LXV. VERBENACEÆ (Vervain Family)

Herbs with opposite leaves, tubular 5-toothed calyx, tubular sympetalous corolla with flaring 5-cleft border, 4 included stamens, a slender style, and a superior ovary splitting into 4 seed-like nutlets in fruit.

1. VERBÈNA (Vervain)

Herbs with flowers in spikes or heads, and unequal stamens.

* Anthers not appendaged; flowers small, in narrow spikes.

+ Spikes very slender, with fruits scattered; flowers white.

1. **Verbèna urticifòlia** (White Vervain). Minutely pubescent to nearly smooth, 3–5 ft. high; leaves oval or ovate, acute, coarsely serrate, petioled; flowers very small, scattered on slender at length much elongated spikes. Open ground.

+ + Spikes thicker or more densely flowered, with crowded fruits; bracts inconspicuous; flowers blue or purple.

2. **Verbèna angustifòlia.** Low, 6–18 in. high; leaves narrowly lanceolate, tapering at base, sessile, roughish, slightly toothed; spikes bearing crowded purple flowers. Dry or sandy ground.

3. **Verbèna hastàta** (Blue Vervain). Tall, 4–6 ft. high; leaves lanceolate or oblong-lanceolate, taper-pointed, cut-serrate, petioled, the lower often lobed and sometimes halberd-shaped at base; spikes erect, with blue flowers. Waste ground and roadsides.

4. **Verbèna stricta** (Hoary Vervain). Downy with soft white hairs, erect, simple or branched, 1–2 ft. high; leaves sessile, obovate or oblong, serrate; spikes thick, somewhat clustered, hairy, with rather large purple flowers. Barrens and prairies.

+ + + Spikes thick, sessile, and leafy-bracted; flowers purple.

5. **Verbèna bracteòsa.** Widely spreading or prostrate, hairy; leaves wedge-lanceolate, cut-pinnatifid or 3-cleft, short-petioled; spikes single, remotely flowered with large often lobed bracts longer than the small purple flowers. Prairies and waste ground.

* * Anthers of longer stamens glandular-tipped; flowers showy, in heads becoming spicate.

6. **Verbèna Aublètia** or **Verbèna Canadénsis.** Hispid-hirsute, ½–1 ft. high; leaves bipinnately parted, the lobes mostly linear or broader; bracts of the spike mostly longer than the calyx; flowers showy, bluish-purple or lilac, at first in a depressed head, but becoming spicate. Plains and prairies, and one of the several parents of the cultivated verbenas.

LXVI. LABIATÆ (Mint Family)

Herbs with square stems, opposite aromatic leaves, more or less 2-lipped corolla, 2 or 4 stamens, a single style, and a deeply 4-lobed ovary becoming 4 seed-like nutlets. (See *Plant Structures*, p. 272; also p. 274, Figs. 259 and 260.)

* Stamens 2.

1. **Monarda.** Calyx tubular; corolla strongly 2-lipped; large flowers in whorled heads.

* * Stamens 4.

+ Corolla almost equally 4-lobed; stamens erect, distant.

2. **Mentha.** Flowers small, in axillary clusters or spicate.

+ + Corolla 2-lipped, the upper lip concave or arched.

++ Inner pair of stamens longer than the outer.

3. **Nepeta.** Anthers approximate in pairs under the upper lip; calyx equally 5-toothed.

++ ++ Outer pair of stamens longer than the inner.

= Calyx deeply 2-lipped, reticulate-veiny.

4. **Brunella.** Cluster of sessile flowers forming a close spike or head.

= = Calyx almost equally 4-lobed, obscurely nerved.

5. **Synandra.** Showy yellowish flowers, axillary.

= = = Calyx 5-10 nerved and 5–10 toothed.

6. **Marrubium.** Stamens included in the short corolla tube.

7. **Lamium.** Stamens ascending under the arched upper lip of the corolla.

1. MONÁRDA (Horse-mint)

Odorous erect herbs with entire or toothed petioled leaves, rather large flowers in whorled heads closely surrounded by bracts, elongated tubular 5-toothed calyx, strongly 2-lipped elongated corolla, upper lip erect and entire or notched, lower lip 3-lobed at apex, and 2 elongated ascending stamens.

* Stamens protruding beyond the upper lip.

1. **Monárda dídyma** (Oswego Tea. Bee-balm). Somewhat hairy, 2 ft. high; leaves ovate-lanceolate, acuminate, serrate, the floral ones and the large outer bracts tinged with red; heads solitary or 2 or 3; calyx smooth, nearly naked in the throat; corolla bright red, 2 in. long. Moist woods.

2. **Monárda fistulòsa** (Wild Bergamot). Smooth or hairy, 2–5 ft. high; leaves ovate-lanceolate, serrate, the uppermost and outer bracts somewhat whitish or purplish; heads solitary or 2 or 3; calyx very hairy in the throat; corolla purple or purplish-dotted, 1 in. or more long. Dry soil.

* * Stamens not protruding beyond the upper lip.

3. **Monárda punctàta** (Horse-mint). Minutely downy, 2–3 ft. high; leaves lanceolate, sparsely serrate, tapering at base; floral bracts yellowish and purple; heads axillary or somewhat spicate; calyx downy; corolla yellowish, the upper lip spotted with purple. Sandy ground.

2. MÉNTHA (Mint)

Fragrant herbs with small purple or whitish flowers in close axillary clusters or spicate, bell-shaped or tubular 5-toothed calyx, corolla with short tube and a bell-shaped 4-cleft border (upper lobe largest, entire or 2-cleft), and 4 equal and distant stamens. (See *Plant Structures*, p. 229, Fig. 212.)

1. **Méntha víridis** or **Méntha spicàta** (Spearmint). Nearly smooth; leaves lanceolate to ovate, unequally serrate, sessile or nearly so; flowers in narrow densely crowded spikes, with conspicuous narrow bracts. Wet places. From Europe.

2. **Méntha piperìta** (Peppermint). Smooth or somewhat hairy, very pungent; leaves lanceolate to ovate, acute, sharply serrate, petioled; flowers stalked in narrow loose interrupted spikes. Along brooks. From Europe.

3. NÉPETA (Cat-mint)

Herbs with tubular obliquely 5-toothed calyx, 2-lipped corolla dilated in the throat, upper lip erect and notched or 2-cleft, lower lip spreading and 3-cleft (middle lobe largest), 4 stamens (outer pair shorter) ascending under the upper lip, and anthers approximate in pairs.

1. **Népeta Catària** (Catnip). Downy, erect, branched; leaves heart-shaped, oblong, deeply crenate, whitish-downy beneath, upper floral ones small and bract-like; flowers whitish dotted with purple, in rather dense clusters. Near dwellings. From Europe.

2. **Népeta Glechòma** or **Glecòma hederàcea** (Ground Ivy. Gill-over-the-Ground). Creeping and trailing; leaves all alike, petioled, round-kidney-shaped, crenate, green both sides; flowers light blue, few in loose axillary clusters. Damp or shady places. From Europe.

4. BRUNÉLLA or PRUNÉLLA (Self-heal)

Low herbs with clusters of flowers sessile in the axils of round membranaceous floral leaves and forming a close spike or head, tubular-bell-shaped veiny 2-lipped calyx (upper lip broad and flat, truncate, with 3 short teeth, lower 2-cleft), 2-lipped corolla, the entire upper lip erect and arched, lower lip 3-cleft and reflexed-spreading (middle lobe rounded and toothed), and 4 stamens with anthers approximate in pairs.

1. **Brunélla vulgàris** or **Prunélla vulgàris.** Leaves ovate-oblong, entire or toothed, petioled, hairy or smooth; corolla violet or flesh-color (rarely white), not twice the length of the purplish calyx. Woods and fields.

5. SYNÁNDRA

Hairy herb with long petioled heart-shaped leaves, showy yellowish flowers, bell-shaped inflated 4-toothed calyx, 2-lipped corolla with long tube much expanded above, upper lip slightly arched and entire, lower lip spreading and 3-cleft (middle lobe broadest and notched), and 4 ascending stamens with hairy filaments and anthers approximate in pairs.

1. **Synándra grandiflòra** or **Synándra hispídula.** About 1 ft. high; lower leaves long-petioled, broadly ovate, heart-shaped, crenate, thin; floral leaves sessile, gradually reduced to bracts, each with a single sessile flower; corolla 1½ in. long, yellowish-white. Moist shady ground.

6. MARRÙBIUM (Horehound)

Whitish-woolly bitter-aromatic herbs with wrinkled-veiny leaves, numerous flowers in head-like axillary clusters, tubular 10-toothed calyx (teeth more or less spiny-pointed and spreading at maturity), 2-lipped corolla, upper lip erect and notched, lower lip 3-cleft and spreading (middle lobe broadest), and 4 stamens included in the corolla-tube.

1. **Marrùbium vulgàre.** Leaves round-ovate, petioled, crenate-toothed; calyx with 10 recurved teeth, the alternate ones shorter; corolla small, white. Waste places. From Europe.

7. LÀMIUM (Dead-nettle)

Low herbs with lowest leaves small and long-petioled, middle leaves heart-shaped and doubly-toothed, floral leaves subtending the whorled flower-cluster, tubular calyx with 5 awl-pointed teeth, 2-lipped corolla with dilated throat, upper lip arched and narrowed at base, lower lip 3-lobed (middle lobe broad and spreading, notched, contracted as if stalked at base, the two lateral lobes small and at the margin of the throat), and 4 stamens ascending under the upper lip and with anthers approximate in pairs. (See *Plant Structures*, p. 274, Fig. 259.)

* Low; flowers small, purple, in few whorls or heads.

1. **Làmium amplexicaúle.** Leaves rounded, deeply crenate-toothed or cut, the upper ones clasping; corolla elongated, upper lip bearded, the lower spotted. From Europe.

2. **Làmium purpùreum.** Like the last, but leaves roundish or oblong, heart-shaped, crenate-toothed, all petioled. From Europe.

* * Taller; flowers larger, in several axillary whorls.

3. **Làmium álbum.** Hairy; leaves ovate, heart-shaped, petioled; corolla white, the tube curved upward, lateral lobes of lower lip bearing a long slender tooth. From Europe.

4. **Làmium maculàtum.** Like the last, but leaves more frequently marked with a white spot on the upper surface, and flowers purplish. From Europe.

LXVII. SOLANACEÆ (Nightshade Family)

Herbs (rarely shrubs) with alternate leaves, regular 5-parted sympetalous flowers, 5 stamens on the corolla, a single style, and a 2-celled ovary becoming a many-seeded pod or berry.

* Fruit a fleshy berry.

+ Herbs; corolla wheel-shaped.

1. **Solanum.** Anthers converging around the style and opening by a terminal hole.

2. **Lycopersicum.** Like *Solanum*, but anthers united at tip and opening lengthwise.

+ + Shrubs; corolla funnel-form.

3. **Lycium.** Flowers clustered in the axils.

* * Fruit a dry pod.

4. **Petunia.** Calyx deeply 5-parted with leaf-like lobes.

5. **Datura.** Calyx tubular-prismatic, 5-toothed.

1. SOLÀNUM (Nightshade)

Herbs or shrubs with wheel-shaped corolla, protruding anthers converging around the style and opening by terminal pores, and fruit a berry. (See *Pl. R.* and *Pl. St.*, p. 26, Fig. 21; also *Plant Structures*, p. 198, Fig. 167*a*.)

* Not at all prickly; anthers blunt.

+ Climbing or twining plants.

1. **Solànum Dulcamàra** (Bittersweet). More or less hairy; leaves ovate-heart-shaped, the upper halberd-shaped, or with 2 ear-like lobes or leaflets at base; flowers purple or blue, small, in small terminal clusters; berries oval, red. Moist ground and around dwellings. From Europe.

+ + Erect herbs.

2. **Solànum nìgrum** (Common Nightshade). Low, much branched and spreading, nearly smooth; leaves ovate, wavy-toothed; flowers white in small umbel-like lateral clusters; berries globular, black. Shaded grounds and fields.

3. **Solànum tuberòsum** (Potato). Erect; leaves pinnate, of several ovate leaflets with minute ones intermixed; flowers blue or white; berries globular, green. Cultivated from Chili for the tubers. (See *Pl. R.* and *Pl. St.*, p. 76, Fig. 67.)

* * Prickly; anthers acute.

4. **Solànum Carolinénse** (Horse-nettle). Hirsute or roughish-pubescent, with usually numerous stout yellowish prickles; leaves oblong or ovate, sinuate-toothed or lobed; flowers violet (rarely white) in simple soon lateral racemes. Sandy soil and waste ground.

2. LYCOPÉRSICUM (Tomato)

Herbs with rank-scented foliage, pinnately compound leaves, yellow flowers, wheel-shaped corolla with very short tube, anthers converging around the style and united by a membrane at their tips and opening lengthwise, and fruit a several-celled and many-seeded large berry.

1. **Lycopérsicum esculéntum** or **Lycopérsicon Lycopérsicon.** Hairy; leaves interruptedly pinnate, the larger leaflets cut or pinnatifid, ovate and pointed; flower clusters short and forked; berry red or yellow and varying much in cultivation. Cultivated from tropical America.

3. LÝCIUM (Matrimony-vine)

Shrubby and often spiny plants with small entire leaves, mostly axillary small flowers, 3-5-cleft calyx, funnel-form corolla, anthers opening lengthwise, a knob-like stigma, and fruit a small berry.

1. **Lýcium vulgàre.** Shrub with long recurved-drooping branches, often not at all spiny; leaves oblong-lanceolate or spatulate, often clustered; the greenish-purple flowers on slender stalks clustered in the axils; berry orange-red. About dwellings. From Europe.

4. PETÙNIA

Herbs with clammy-pubescent foliage, large and showy flowers, calyx with leaf-like lobes much longer than its tube, funnel-form corolla, unequal and included stamens, and fruit a pod.

1. **Petùnia nyctaginiflòra.** Stout and flowering at evening; leaves oval-oblong, narrowed into a distinct petiole; corolla white, the long narrow tube 3-4 times the length of the calyx. Cultivated from South America.

2. **Petùnia violàcea.** Stems weaker; leaves ovate or oval, sessile or very nearly so; corolla violet-purple or rose-red, the shorter, broader, and inflated tube hardly twice the length of the calyx. Cultivated from South America, and variously modified.

5. DATÙRA (Jimson-weed. Thorn-apple)

Rank weeds with ovate leaves, large showy flowers in the forks of the branching stem, prismatic and toothed calyx, funnel-form corolla with large and spreading plaited border, a 2-lipped stigma, and fruit a globular prickly pod.

1. **Datùra Stramònium.** Smooth with green stem; leaves sinuate-toothed or angled; corolla white, 3 in. long; lower prickles of the pod usually shorter. Waste ground. From Asia.

2. **Datùra Tátula.** Mostly taller; stem purple; corolla pale violet-purple; prickles of the pod nearly equal. Waste ground. From tropical America.

LXVIII. SCROPHULARIACEÆ (Figwort Family)

Herbs with a 2-lipped or less irregular corolla, 4 unequal stamens (sometimes 2 or 5) on the corolla-tube, a single style, and a superior 2-celled ovary becoming a many-seeded pod.

* Upper lip or lobes of the corolla covering the lower in bud.

+ Leaves alternate.

1. **Verbascum.** Corolla wheel-shaped; stamens 5, with bearded filaments.
2. **Linaria.** Corolla tubular, with a spur at base; stamens 4.

+ + Leaves opposite.

3. **Scrophularia.** Corolla somewhat globular, with 4 erect lobes and 1 spreading one.
4. **Collinsia.** Corolla 2-cleft, the middle lobe of the lower lip sac-like and inclosing the stamens.
5. **Pentstemon.** Corolla tubular; the 5th or sterile stamen about as long as the rest.

* * Under lip or lateral lobes of the corolla covering the upper in bud.

+ Corolla almost regular; stamens 2.

6. **Veronica.** Flowers blue or white; leaves chiefly opposite.

+ + Corolla 2-lipped, the upper lip narrow and inclosing the 4 stamens.

7. **Castilleia.** Basal leaves mostly entire, the floral ones showy and colored.
8. **Pedicularis.** Basal leaves pinnately parted, the floral ones not showy.

1. VERBÁSCUM (Mullein)

Tall herbs with alternate leaves (those of the stem sessile or decurrent), large terminal spikes of flowers, 5-parted calyx, wheel-shaped 5-lobed corolla, 5 stamens with woolly filaments, style flattened at tip, and a globular pod.

1. **Verbáscum Thápsus** (Common Mullein). Densely woolly throughout; stem tall and stout, simple, winged by the decurrent bases of oblong leaves; flowers yellow (rarely white), in a prolonged and very dense cylindrical spike. Fields. From Europe. (See *Pl. R.* and *Pl. St.*, p. 41, Fig. 36.)

2. **Verbáscum Blattària** (Moth Mullein). Green and smoothish, slender;

lower leaves petioled, oblong, serrate, sometimes lyre-shaped, the upper partly clasping ; flowers yellow or white with a tinge of purple, in a loose raceme ; filaments all bearded with violet wool. Roadsides and waste ground. From Europe.

2. LINÀRIA (Toad-flax)

Herbs with alternate leaves, 5-parted calyx, tubular corolla with a spur at base and a prominent palate nearly closing the throat, 4 stamens, and a thin pod opening below the summit by 1 or 2 pores.

1. **Linària vulgàris** or **Linària Linària** (Butter-and-Eggs. Ramsted). Erect and smooth, 1–3 ft. high ; leaves linear or nearly so, extremely numerous, alternate ; flowers yellow, with slender spur, in a terminal raceme. Fields and roadsides. From Europe. (See *Pl. R.* and *Pl. St.*, p. 80, Fig. 74*d* ; also *Plant Structures*, p. 228, Fig. 210*d*.)

3. SCROPHULÀRIA (Figwort)

Tall herbs with mostly opposite leaves, small greenish-purple or lurid flowers in a loose terminal cluster, deeply 5-cleft calyx, corolla with a somewhat globular tube (4 upper lobes of the short border erect, the lower one spreading), and 4 declined stamens.

1. **Scrophulària Marylándica.** Smooth, 3–5 ft. high; stem 4-sided; leaves ovate, oblong, or the upper lanceolate, acuminate, cut-serrate, rounded at base. Damp ground.

4. COLLÍNSIA

Slender branching herbs with opposite leaves, handsome flowers in clusters in the axils of the upper leaves, deeply 5-cleft calyx, deeply 2-lipped corolla saccate or bulging at base, upper lip 2-cleft with lobes turned backward, and middle lobe of the 3-cleft lower lip sac-like and inclosing the 4 declined stamens and style.

1. **Collínsia vérna.** Slender, 6–20 in. high ; lower leaves ovate, the upper ovate-lanceolate and clasping by the heart-shaped base, toothed ; corolla blue and white, twice the length of the calyx. Moist soil.

5. PENTSTÈMON

Herbs branching at base, with opposite leaves (upper sessile and mostly clasping), mostly showy flowers in a terminal cluster, 5-parted calyx, tubular to bell-shaped more or less inflated 2-lipped corolla, upper lip 2-lobed and lower 3-cleft, and 4 stamens with anthers and a fifth represented by a filament.

1. **Pentstèmon pubéscens** or **Pentstèmon hirsùtus.** Stem 1–2 ft. high, sticky-hairy ; leaves oblong to lanceolate, 2–4 in. long, the lowest and basal ones ovate or oblong, usually toothed ; flower cluster narrow ; corolla dull violet or purple (or partly white), slightly inflated, the throat nearly closed by a hairy palate ; sterile filament densely bearded. Dry or rocky ground.

2. **Pentstèmon lævigàtus** or **Pentstèmon Pentstèmon.** Stem 2–4 ft. high, mostly smooth except in the flower cluster ; leaves thicker, glossy ; stem leaves ovate to lanceolate, with rounded clasping base, 2–5 in. long ; flower cluster broader ; corolla white commonly tinged with purple, abruptly and broadly inflated, the throat widely open ; sterile filament thinly bearded above. Moist or rich soil.—The var. **Digitàlis** has even taller stems, and a larger and more abruptly inflated white corolla.

6. VERÓNICA (Speedwell)

Herbs with opposite or alternate leaves, blue or white flowers, 4-parted calyx, wheel-shaped corolla with 4-parted border, 2 protruding stamens, and a flattened pod obtuse or notched at apex.

* Leaves opposite; flowers in axillary racemes, pale blue.

1. **Verónica Anagállis** (Water Speedwell). Smooth, creeping, and rooting at base, then erect; leaves sessile, most of them clasping by a heart-shaped base, ovate-lanceolate, acute, serrate or entire; flowers with purple stripes; pod inflated, round, slightly notched. Brooks and ditches.

2. **Verónica Americàna** (American Brooklime). Smooth, decumbent at base, then erect, 8-15 in. high; leaves mostly petioled, ovate or oblong, serrate, truncate or slightly heart-shaped at base; pod inflated, round. Brooks and ditches.

3. **Verónica officinàlis** (Common Speedwell). Hairy, with prostrate stems; leaves short-petioled, obovate, obtuse, serrate; flowers in densely many-flowered racemes; pod strongly flattened, triangular, broadly notched. Dry hills and open woods.

* * Leaves opposite; flowers in a terminal raceme.

4. **Verónica serpyllifòlia** (Thyme-leaved Speedwell). Much branched at the creeping base, nearly smooth, branches ascending, simple, 2-4 in. high; leaves ovate or oblong, obscurely crenate, the lowest petioled and rounded, the upper passing into lanceolate bracts; flowers whitish or pale blue with deeper stripes; pods flat, rounded, broader than long, obtusely notched. Roadsides and fields.

* * Leaves mostly alternate; flowers appearing axillary and solitary.

5. **Verónica peregrìna** (Neckweed. Purslane Speedwell). Nearly smooth or puberulent, erect, 4-9 in. high, branched; lowest leaves petioled, oval-oblong, toothed, the others sessile; upper leaves oblong and entire, larger than the almost sessile whitish flowers; pod round, slightly notched. In damp soil.

6. **Verónica arvénsis** (Corn Speedwell). Hairy, 3-8 in. high; lower leaves petioled, ovate, crenate; uppermost sessile, lanceolate, entire; flowers blue; pod inversely heart-shaped. Cultivated ground. From Europe.

7. CASTILLÈIA (Painted-cup)

Herbs with alternate entire or cut-lobed leaves, floral leaves usually dilated and colored and more showy than the yellow or purplish spiked flowers, tubular flattened and usually 2-cleft calyx, 2-lipped corolla with tube included in the calyx, upper lip long and narrow and arched and inclosing the 4 unequal stamens, and lower lip short and 3-lobed.

1. **Castillèia coccínea** (Scarlet Painted-cup). Hairy; stem simple; basal leaves clustered, mostly entire, obovate or oblong; stem leaves incised; floral leaves 3-5-cleft, bright scarlet (rarely yellow) toward the summit; calyx about as long as the pale-yellow corolla. Low sandy ground.

8. PEDICULÀRIS (Lousewort)

Herbs with pinnatifid leaves, those of the flower-cluster bract-like, rather large flowers in a spike, calyx variously cleft, strongly 2-lipped corolla, upper lip arched and flattened and often beaked at apex, lower lip 3-lobed and 2-crested above, and 4 stamens under the upper lip.

1. **Pedicularis Canadensis** (Common Lousewort. Wood Betony). Hairy; stems clustered, 5–12 in. high; leaves scattered, the lowest pinnately parted, the others half-pinnatifid; spikes short and dense; calyx split in front; upper lip of the greenish-yellow and purplish corolla hooded, incurved, 2-toothed under the tip; pod flat, somewhat sword-shaped. Dry open soil.

LXIX. BIGNONIACEÆ (Bignonia Family)

Woody climbers or trees with funnel-form or bell-shaped 5-lobed corolla, 2 or 4 stamens on the corolla-tube, a long style, and a superior 2-celled ovary becoming a long pod containing winged seeds.

1. **Tecoma.** Leaves pinnately compound; woody climbers.
2. **Catalpa.** Leaves simple and large; trees.

1. TÉCOMA (Trumpet-flower)

Woody climbers with pinnately compound leaves, clustered large flowers, bell-shaped 5-toothed calyx, funnel-form corolla, 4 stamens, and a long pod with winged seeds.

1. **Técoma radìcans** (Trumpet Creeper). Leaflets 9–11, ovate, pointed, toothed; calyx yellowish; corolla tubular-funnel-form, orange and scarlet, 2½–3 in. long; stamens included; pod oblanceolate, 4–5 in. long.

2. CATÁLPA (Catalpa. Indian Bean)

Trees with ovate or heart-shaped mostly opposite leaves, clusters of showy flowers, deeply 2-lipped calyx, bell-shaped swelling corolla with a wavy spreading irregular 5-lobed border, 2 or 4 stamens, and very long slender pods with fringe-winged seeds.

1. **Catálpa speciòsa.** Large and tall tree with thick bark; leaves large, heart-shaped, long-pointed; corolla 2 in. long, nearly white, inconspicuously spotted, the lower lobe notched; pod thick. Low rich woods.

2. **Catálpa bignonioìdes** or **Catálpa Catálpa.** Low and much branched, with thin bark; leaves similar; corolla smaller, 1½ in. long, thickly spotted, the lower lobe entire; pod much thinner. Cultivated from the South.

LXX. PLANTAGINACEÆ (Plantain Family)

Herbs with a basal cluster of ribbed leaves, and naked stems terminating in spikes of 4-parted sympetalous flowers.

1. PLANTÀGO (Plantain)

Herbs with 4 sepals, wheel-shaped and 4-lobed corolla, 4 protruding stamens, a single slender style with long hairy stigma, and a superior 2-celled pod opening by a lid.

* Leaves broad and strongly ribbed, smooth.

1. **Plantàgo màjor** (Common Plantain). Smooth or somewhat hairy; leaves ovate, oblong, oval or slightly heart-shaped, often toothed, abruptly narrowed into a channeled petiole, the strong ribs distinct to the base; spike dense, obtuse; pod ovoid, the lid opening near the middle; seeds reticulated. Roadsides and near dwellings. Introduced from Europe.

2. **Plantàgo Rugèlii.** Leaves as in the last, but thinner; spikes long and slender, tapering at apex; pod cylindrical-oblong, the lid opening much below the middle; seeds not reticulated. With the last.

* * Leaves lanceolate and strongly ribbed, mostly hairy.

3. **Plantàgo lanceolàta** (Ribgrass. English Plantain). Mostly hairy; the naked flower-bearing stem slender, ¼–2 ft. high, at length much longer than the lanceolate strongly ribbed leaves; spike dense, very short at first, becoming cylindrical. Common. From Europe.

* * * Leaves very narrow and not strongly ribbed; plant more or less white-woolly.

4. **Plantàgo Patagónica** or **Plantàgo Púrshii.** From sparsely hairy to white-woolly; leaves 1–3-nerved, narrowly linear to oblanceolate; spikes cylindrical, very dense, more or less hairy or woolly, with bracts short or much longer than the flowers. Prairies and plains. Very variable, and including several forms which are doubtless separate species.

LXXI. RUBIACEÆ (Madder Family)

Shrubs or herbs with entire opposite or whorled leaves, regular sympetalous 4-lobed corolla, 4 stamens on corolla-tube, a single style, and an inferior 2-celled ovary becoming a pod or berry.

* Low herbs.

1. **Houstonia.** Erect; fruit a pod with numerous seeds.
2. **Mitchella.** Trailing evergreen; fruit a scarlet berry with few seeds.

* * Shrubs.

3. **Bouvardia.** Flowers scarlet, in clusters at the ends of branches; fruit a globular pod.

1. HOUSTÒNIA

Small herbs with opposite leaves, clustered or solitary flowers, 4-lobed calyx, tubular corolla usually with flaring border, and fruit a pod.

1. **Houstònia cærùlea** (Bluets. Innocence). Small and delicate, 3–5 in. high; leaves spatulate; peduncle slender, erect, 1-flowered; corolla with flaring border light blue, pale lilac, or nearly white, with a yellowish eye; pod broad and somewhat 2-lobed. Moist and grassy places.

2. **Houstònia purpùrea.** Smooth or hairy, 8–15 in. high; leaves varying from roundish-ovate to lanceolate; flowers in small terminal clusters; calyx lobes longer than the globular pod; corolla funnel-form, purplish. Open woods.—The var. **ciliolàta** is low, with small leaves, those of the stem spatulate, the basal

ones oblong, ciliate and forming a rosette.—The var. **longifòlia** has lanceolate to linear leaves, the basal ones oval or oblong and not ciliate. (See *Pl. R.* and *Pl. St.*, p. 129, Fig. 135.)

2. MITCHÉLLA (Partridge Berry)

Smooth and trailing evergreen herb with round and shining petioled leaves, white fragrant flowers often tinged with purple and in pairs with their ovaries united, 4-toothed calyx, funnel-form corolla with lobes densely bearded inside, and scarlet berries which remain over winter.

1. **Mitchélla rèpens.** Leaves often variegated with whitish lines. Dry woods, creeping about the base of trees.

3. BOUVÁRDIA

Shrubby plants with opposite or whorled leaves, flowers in clusters at the end of the branches, calyx with 4 slender lobes, corolla with a long and slender or trumpet shaped tube and short spreading lobes, 4 anthers almost sessile in the throat, and a small globular pod.

1. **Bouvárdia triphýlla.** Leaves ovate or oblong, smoothish, in whorls of 3 or the upper in pairs; corolla scarlet, minutely downy outside, nearly 1 in. long. Cultivated from Mexico.

2. **Bouvárdia leiántha.** Leaves more downy; corolla deep scarlet, smooth. Cultivated from Mexico.

LXXII. CAPRIFOLIACEÆ (Honeysuckle Family)

Shrubs or herbs with opposite leaves, tubular or rotate 4- or 5-lobed corolla, 4 or 5 stamens on the corolla-tube, and an inferior 4- or 5- (or 2- or 3-) celled ovary becoming a berry, stone-fruit, or pod.

* Corolla wheel-shaped or urn-shaped; stigmas sessile or nearly so; flowers in terminal flat-topped clusters; shrubs.

1. **Sambucus.** Leaves pinnately compound.
2. **Viburnum.** Leaves simple.

* * Corolla tubular or bell-shaped; style slender.

+ Herbs with axillary flowers.

3. **Triosteum.** Flowers sessile in the axils.

+ + Erect or climbing shrubs.

4. **Symphoricarpos.** Corolla bell-shaped and regular; berry 2-seeded.
5. **Lonicera.** Corolla tubular and more or less irregular; berry several-seeded.
6. **Diervilla.** Corolla funnel-form and nearly regular; pod 2-celled, many-seeded.

1. SAMBÙCUS (Elder)

Shrubby plants with pinnate leaves, serrate leaflets, numerous small white flowers in large clusters, calyx lobes minute or wanting, urn-shaped corolla with broadly spreading 5-cleft border, 5 stamens, and a berry-like juicy fruit.

1. **Sambùcus Canadénsis** (Common Elder). Stems scarcely woody, 5–10 ft. high with white pith; leaflets 5–11, oblong, mostly smooth, the lower often 3-parted, flower clusters flat; fruit black purple. Rich open soil.

2. **Sambùcus racemòsa** or **Sambùcus pùbens** (Red-berried Elder). Stems woody, 2–12 ft. high with warty bark and brown pith; leaflets 5–7, ovate, lanceolate, downy beneath; flower clusters convex or pyramidal; fruit bright red. Rocky woods.

2. VIBÚRNUM (Arrowwood)

Shrubs with simple leaves, white flowers in flat clusters, 5-toothed calyx, deeply 5-lobed spreading corolla, 5 stamens, and a berry-like fruit.

* Leaves palmately veined, strongly 3-lobed.

1. **Vibúrnum Ópulus** (Cranberry Tree). Nearly smooth, upright, 4–10 ft. high; leaves 3-5-ribbed, wedge shaped or truncate at base, the spreading lobes pointed; marginal flowers of the cluster with greatly enlarged flat corollas; fruit light red, globose, acid. Low moist ground. The cultivated snow-ball bush is a form in which the whole flower cluster becomes modified like the marginal flowers.

* * Leaves pinnately veined, coarsely toothed.

2. **Vibúrnum dentàtum** (Arrowwood). Smooth, 5–15 ft. high; leaves broadly ovate, with numerous sharp teeth; fruit ovoid, blue or purple. Wet places.

* * * Leaves pinnately veined, finely serrate.

3. **Vibúrnum Lentàgo** (Sheep Berry). Tree 10–30 ft. high; leaves ovate, strongly pointed, sharply serrate; flower cluster large; fruit oval, black, sweet. Woods and banks of streams.

4. **Vibúrnum prunifòlium** (Black Haw). Tall shrub or small tree; leaves oval, obtuse, finely and sharply serrate, smaller than in the last, 1–2 in. long; fruit similar. Dry or moist ground.

3. TRIÓSTEUM (Feverwort)

Coarse hairy herbs leafy to the top, with large entire pointed leaves narrowed at base but connate about the simple stem, sessile flowers solitary or clustered in the axils, narrow leaf-like calyx-lobes, tubular 5-lobed corolla scarcely longer than the calyx, 5 stamens, and 3-celled ovary becoming a dry stone fruit.

1. **Triósteum perfoliàtum.** Soft-hairy, 2–4 ft. high; leaves oval, abruptly narrowed below; flowers brownish-purple, mostly clustered in the axils; fruit orange-color. Rich woods.

2. **Triósteum angustifòlium.** Smaller, bristly-hairy; leaves lanceolate, tapering to the base; flowers greenish-cream-color, mostly single in the axils. Rich woods.

4. SYMPHORICÁRPOS (Snowberry)

Low branching upright shrubs with oval short-petioled leaves downy beneath, white- or rose-tinged flowers in spikes or clusters, short calyx teeth, bell-shaped regularly 4- or 5-lobed corolla with as many short stamens in its throat, and fruit a berry.

1. **Symphoricárpos racemòsus.** Flowers in a loose and somewhat leafy spike at the end of the branches; corolla bearded inside; berries large, white. Rocky ground. Common in cultivation.

5. LONÍCERA (Honeysuckle. Woodbine)

Erect or climbing shrubs with entire leaves, often showy and fragrant flowers, very short calyx teeth, tubular or funnel-form corolla, 5 stamens, and a 2-3-celled ovary becoming a berry.

1. **Lonícera sempérvirens** (Trumpet Honeysuckle). Twining shrubs; leaves oblong, smooth, the lower petioled, the uppermost pairs connate; flowers in sessile clusters from the axils of the upper leaves; corolla trumpet-shaped, nearly 2 in. long, deep red outside, yellowish within; stamens and style a little protruding; berry red or orange. Thickets. Common in cultivation.

2. **Lonícera gràta** or **Lonícera Caprifòlium** (American Woodbine). Twining shrubs; leaves smooth, whitish beneath, obovate, the 2 or 3 upper pairs united; flowers whorled in the uppermost axils, fragrant; corolla whitish with a purple tube 1 in. long, fading yellowish, the lower lip narrow, the upper broad and 4-lobed; stamens and style conspicuously protruding; berries red. Rocky woods, cultivated.

3. **Lonícera Tatàrica** (Tartarian Honeysuckle). Tall erect shrub or straggling shrub; leaves oval, heart-shaped, obtuse or acute; flowers in pairs, whitish or bluish-red, produced in profusion; berries red and united. Cultivated from Asia.

6. DIERVÍLLA (Bush Honeysuckle)

Low upright shrubs with ovate or oblong pointed serrate leaves, small clusters of axillary or terminal flowers, calyx-tube tapering at summit and with slender lobes, funnel-form corolla, 5 stamens, and an ovoid pointed pod.

1. **Diervílla trífida** or **Diervílla Diervílla.** Shrubs 1-4 ft. high; leaves oblong ovate, taper-pointed; peduncles mostly 3-flowered; corolla pale yellow, not showy; pod oblong, long-beaked. Rocky ground.

2. **Diervílla flórida** (Weigela). Shrub 5-8 ft. high; leaves ovate-lanceolate, serrate; corolla showy, rose color, funnel-form with abruptly narrowed base; ovary very slender and pod linear. Cultivated from Japan and China.

LXXIII. CUCURBITÀCEÆ (Gourd Family)

Mostly tendril-bearing herbs with alternate palmately lobed or veined leaves, often sympetalous flowers, mostly 3 stamens usually united by their often tortuous anthers, and an inferior

1–3-celled ovary becoming a fleshy fruit with a membranous or hard rind.

* Flowers large, on separate stalks in the axils ; fruit large and fleshy, with a harder rind.

+ Tendrils forked.

1. **Cucurbita.** Corolla large and funnel-form ; fruit hollow.
2. **Citrullus.** Corolla deeply 5-cleft ; fruit not hollow.

+ + Tendrils not forked.

3. **Cucumis.** Corolla of 5, almost separate, acute petals.

* * Flowers small in profuse clusters ; fruit prickly.

4. **Echinocystis.** Corolla open, spreading, of 6 petals united at base ; fruit dry and bladdery ; tendrils 3-forked.

1. CUCÚRBITA (Pumpkin. Squash)

Herbs with forked tendrils, broad leaves, large flowers solitary in the axils, calyx with bell-shaped tube, funnel-form 5-cleft yellow corolla, 3 stamens with much curved slender anthers united into a small head, and a large fleshy fruit with hard rind.

1. **Cucúrbita Pèpo** (Pumpkin). Stalks and lobed leaves rough bristly ; flower-tube flaring, the lobes pointed and erect ; fruit hollow. Cultivated under numerous forms as the field pumpkin, certain squashes, and gourds.

2. CITRÚLLUS (Watermelon)

Herbs with forked tendrils, axillary flowers, short bell-shaped calyx-tube, deeply 5-cleft pale-yellow corolla, anthers lightly cohering, and seeds imbedded in the edible pulp.

1. **Citrúllus vulgàris.** Prostrate ; leaves deeply 3 5-lobed ; pulp reddish or white, containing dark imbedded seeds. Cultivated from Asia.

3. CÙCUMIS (Melon. Cucumber)

Herbs with simple tendrils, corolla of 5 almost separate acute petals, separate stamens, and large fruit with fleshy rind.

1. **Cùcumis Mèlo** (Muskmelon. Cantaloupe). Leaves round heart-shaped, the lobes (if any) rounded ; fruit with smooth rind and sweet flesh, the edible part being the inner rind. Cultivated from Asia.

2. **Cùcumis sativus** (Cucumber). Leaves more or less lobed, the lobes acute, the middle one more prominent, often pointed ; fruit rough or spiny when young, smooth when mature. Cultivated from Asia.

4. ECHINOCÝSTIS or MICRÁMPELIS (Wild Cucumber)

Tall climbing herbs with 3-forked tendrils, thin leaves, very numerous small greenish-white flowers, 6 petals united at base into an open spreading corolla, anthers more or less united, and a 2-celled ovary which ripens into a fleshy at length dry bladdery fruit clothed with weak prickles, the inner part fibrous-netted.

1. **Echinocýstis lobàta** or **Micrámpelis lobàta.** Leaves deeply and sharply 5-lobed ; fruit oval, 2 in. long. Rich soil along streams, also cultivated for arbors.

LXXIV. CAMPANULÀCEÆ (Campanula Family)

Herbs with alternate leaves, bell-shaped or wheel-shaped usually blue and showy corolla, 5 separate stamens, a single style, and a 3–5-celled ovary becoming a many-seeded pod.

1. **Specularia.** Flowers sessile in the axils of the roundish clasping leaves ; filaments hairy.

2. **Campanula.** Flowers on slender stalks or in terminal spikes ; filaments smooth.

1. SPECULÀRIA or LEGOÙZIA (Venus Looking-glass)

Low herbs with axillary blue or purplish flowers, 5-lobed calyx, wheel-shaped 5-lobed corolla, hairy filaments, and a 3 celled oblong pod opening on the side by 3 holes.

1. **Speculària perfoliàta** or **Legoùzia perfoliàta.** Somewhat hairy, 3-20 in. high ; leaves roundish or ovate, clasping by the heart-shaped base, toothed ; flowers sessile, solitary or 2–3 together, only the upper ones with a conspicuous corolla ; pod opening rather below the middle. Sterile open ground.

2. CAMPÁNULA (Bellflower)

Herbs with terminal or axillary flowers, 5-cleft calyx, usually bell-shaped 5-lobed corolla, broad filaments, and a 3- or 5-celled short pod opening on the side by as many holes. (See *Pl. R.* and *Pl. St.*, p. 19, Fig. 13 ; p. 80, Fig. 74*a* ; also *Plant Structures*, p. 228, Fig. 210*a*).

* Stigmas and cells of the ovary 3.

+ Flowers few, on slender stalks ; stem-leaves narrow.

1. **Campánula rotundifòlia** (Harebell). Mostly smooth, slender, branching, 5–12 in. high, 1–10-flowered ; basal leaves round-heart-shaped or oval, long-petioled, early withering away ; stem-leaves numerous, linear or narrowly lanceolate, entire, smooth ; calyx-lobes awl-shaped ; corolla bright blue ; style straight ; pod nodding ; its openings below the middle. Shaded rocky ground.

2. **Campánula aparinoides** (Marsh Bellflower). Rough backward on the stem-angles and leaf-margins, simple, slender and weak, 8–20 in. high ; leaves linear-lanceolate, slightly toothed ; flowers on diverging stalks ; calyx-lobes triangular ; corolla nearly white ; style straight ; pod erect, its openings below the middle. Wet grassy ground.

+ + Flowers in a long spike ; stem-leaves broad.

3. **Campánula Americàna** (Tall Bellflower). Stem mostly simple, 3-6 ft. high ; leaves ovate to lanceolate, taper-pointed, serrate, thin, somewhat hairy, 2½–6 in. long ; light-blue flowers in spikes 1–2 ft. long ; style declined and upwardly

curved, much longer than the wheel-shaped corolla ; openings of pod close to the summit. Moist rich soil.

* * Stigmas and cells of the ovary 5.

4. **Campánula Mèdium** (Canterbury Bells). Erect, branching, hairy ; leaves coarsely toothed ; flowers oblong bell-shaped, 2-3 in. long, blue varying to white ; calyx with reflexed leafy appendages. Cultivated from Europe.

LXXV. CICHORIACEÆ (Chicory Family)

Like *Compositæ*, but all the flowers of the head with strap-shaped corollas. In ours the flowers are yellow.

1. **Krigia.** Akene flat-topped ; pappus a mixture of scales and bristles.

2. **Taraxacum.** Akene prolonged into a very slender beak bearing the soft white pappus.

1. KRÍGIA or ADOPÒGON (Dwarf Dandelion)

Small herbs, branched from the base, with chiefly basal and lyrate or toothed leaves, small heads of flowers terminating naked stems or branches, several thin involucral scales in about 2 rows, short flat-topped akenes, and a double pappus (outer chaffy scales, inner delicate bristles).

1. **Krigia Virgínica** or **Adopògon Caroliniànum.** Stems several, 1-10 in. high, becoming branched and leafy ; earlier leaves roundish and entire, the others narrower and often pinnatifid ; pappus of 5-7 scales and as many bristles. Moist ground.

2. **Krigia amplexicaùlis** or **Adopògon Virgínicum.** Stem 1-2 ft. high ; stem-leaves 1-3, oblong or oval, clasping, mostly entire ; basal leaves on short-winged petioles, often toothed ; pappus of 10-15 scales and 15-20 bristles. Moist ground.

2. TARÁXACUM (Dandelion)

Herbs with a basal rosette of pinnatifid leaves, large and solitary heads on slender hollow stems, double involucre (outer short scales, inner long and narrow erect scales in a single row), and an oblong ribbed akene prolonged into a very slender beak bearing the soft white pappus.

1. **Taráxacum officinàle** or **Taráxacum Taráxacum.** Smooth or at first hairy ; outer involucre reflexed ; inner involucre at first erect, but reflexed in fruit and exposing the globular head of pappus. Everywhere. From Europe. (See *Pl. R.* and *Pl. St.*, p. 114, Fig. 113 ; also *Plant Structures*, p. 213, Fig. 187 ; p. 277, Fig. 262 ; p. 278, Fig. 263.)

LXXVI. COMPOSITÆ (Composite Family)

The greatest family of flowering plants, chiefly blooming in summer and autumn, with flowers collected in a head which is surrounded by a rosette of bracts (*involucre*), the marginal flowers (*rays*) usually with strap-shaped conspicuous corollas,

the inner flowers (forming the *disk*) tubular and 5-toothed, calyx in the form of hairs, bristles, teeth, scales, etc. (*pappus*), 5 stamens united by their anthers, a 2-cleft style, and an inferior ovary becoming a dry seed-like akene. (See *Plant Structures*, p. 275; also p. 276, Fig. 261.)

* Ray-flowers white or purple.

+ Disk flat, yellow.

1. **Erigeron.** Leaves entire or toothed; pappus of hair-like bristles.
2. **Chrysanthemum.** Leaves pinnately cut; pappus none.

+ + Disk conical, purplish.

3. **Echinacea.** Rays very long, rose-purple, drooping; pappus a small-toothed border.

* * Ray-flowers yellow.

4. **Rudbeckia.** Involucre of spreading leaf-like bracts; disk dark and hemispherical; pappus none.
5. **Senecio.** Involucre of narrow erect bracts; disk yellow and flat; pappus of copious soft white hairs.

1. ERÍGERON (Fleabane)

Herbs with entire or toothed leaves, solitary or clustered heads on naked peduncles, about equal and narrow involucral scales, white or purple rays, yellow disk, flattened akenes, and pappus of hair-like bristles.

1. **Erígeron bellidifòlius** or **Erígeron pulchéllus** (Robin's Plantain). Hairy, producing offsets at base; stem simple, rather naked above, bearing few large heads on slender stalks; basal leaves obovate and spatulate, sparingly toothed; stem-leaves distant, lanceolate-oblong, partly clasping, entire; rays (about 50) rather broad, light bluish-purple. Thickets and moist ground.

2. **Erígeron Philadélphicus** (Common Fleabane). Hairy; stem leafy, branching above, bearing several small heads; leaves thin, oblong, the upper ones smoothish, clasping by a heart-shaped base, mostly entire, the lowest spatulate and toothed; rays innumerable and very narrow, rose-purple or flesh-color. Moist ground.

3. **Erígeron ánnuus** (Daisy Fleabane). Stem stout, 3–5 ft. high, branched, beset with spreading hairs; leaves coarsely and sharply toothed, the lowest ovate and tapering into a margined petiole; rays numerous, white tinged with purple, not twice the length of the bristly involucre. Fields and waste places.

4. **Erígeron strigòsus** or **Erígeron ramòsus** (Daisy Fleabane). Stem smaller and simpler, roughish like the leaves with minute flattened hairs, or almost smooth; leaves entire or nearly so, the upper lanceolate and scattered, the lowest oblong or spatulate and tapering to a slender petiole; rays numerous, white, twice the length of the minutely hairy involucre. Fields and waste places.

2. CHRYSÁNTHEMUM (Ox-eye Daisy)

Herbs with pinnately cut leaves, single or clustered heads, overlapping involucral scales, white rays, yellow and flat disk, striate akenes, and no pappus.

1. **Chrysánthemum Leucánthemum** (Marguerite. White Daisy). Stem erect, nearly simple, naked above and bearing a single large head; basal leaves spatulate, petioled, the others partly clasping, all cut or toothed. Fields and meadows. From Europe.

3. ECHINÀCEA or BRAUNÈRIA (Purple Cone-flower)

Herbs with chiefly alternate leaves, stout and nearly simple stems naked above and terminated by a single large head, lanceolate involucral scales overlapping and spreading, very long rose-purple drooping rays, conical purplish disk, thick and short 4-sided akenes, and pappus a small toothed border.

1. **Echinàcea purpùrea** or **Braunèria purpùrea.** Stem smooth or rough-bristly as well as the leaves; leaves rough, often serrate, the lowest ovate, 5-nerved, long-petioled, the others ovate-lanceolate; rays 15–20, dull purple to whitish, 1–2 in. long or more. Prairies.

2. **Echinàcea angustifòlia** or **Braunèria pállida.** Stem (as well as the leaves) bristly-hairy, slender; leaves lanceolate and linear-lanceolate, alternate at base, 3-nerved, entire; rays 12–15, rose-color or red, 2 in. long. Prairies.

4. RUDBÉCKIA (Cone-flower)

Herbs with alternate leaves, showy terminal heads, leaf-like and spreading involucral scales, long yellow rays, hemispherical to oblong dark disk with short chaff, 4-sided smooth akenes, and no pappus.

1. **Rudbéckia hírta.** Very rough and bristly-hairy throughout; stems simple or branched near the base, stout, 1–2 ft. high, naked above, bearing single large heads; leaves nearly entire, the upper oblong or lanceolate, the lower spatulate; disk dull brown. Dry soil.

5. SENÈCIO (Groundsel)

Herbs with alternate leaves, solitary or clustered heads of yellow flowers, cylindrical simple involucre of erect more or less united scales, and pappus of very numerous soft and slender white hairs. (See *Plant Relations*, p. 114, Fig. 114.)

1. **Senècio lobàtus** (Butter-weed). Rather tall; leaves smooth or soon becoming so, somewhat fleshy, lyrate or pinnate, the divisions or leaflets crenate or cut-lobed, variable; heads small, in a naked flat-topped cluster; rays 6–12, conspicuous. Wet ground.

2. **Senécio aùreus** (Squaw-weed). Smooth or woolly when young, 1–3 ft. high; leaves thin, the basal ones simple and rounded (larger ones mostly heart-shaped), crenate-toothed, long-petioled; lower stem-leaves lyrate; upper leaves lanceolate, pinnately cut, sessile or partly clasping; heads in an umbel-like cluster; rays 8–12. Very common.—The var. **obovàtus** has thicker basal leaves round-obovate with a wedge-shaped or truncate base.—The var. **Balsámitæ** has lanceolate, spatulate, or oblong basal leaves narrowed to a petiole and serrate.

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